DEC 7 1922

Fall Trade Peak Passing?—Page 1551

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IRON TRADE REVIEW

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VOL. LXXI. No. 23

CLEVELAND, O., DECEMBER 7, 1922

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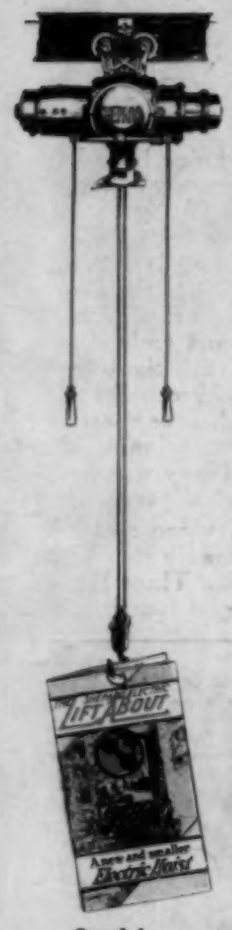
THE SHEPARD ELECTRIC LIFT ABOUT

Good hoisting service at a remarkably low cost



Send for this illustrated *LiftAbout* folder

Briefly, that tells the story of our powerful little electric hoist which is being purchased in great numbers for use in the foundry, shop, or yard.

With its foundry control it makes a sure, safe, and fast job of the precise work of pouring, handling patterns, flasks, castings, and lowering copes.

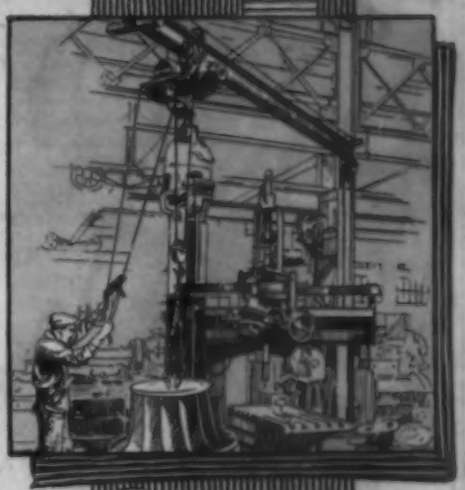
The same precision of control is afforded the machinist, who *unassisted,* can do his own lifting—other men are not called from their work to help him with every tonnage piece.

Enclosed unit construction, damp-, dust-, fume-, and weather-proof throughout, all working parts are immune to varying atmospheric conditions—indoors or out.

Throughout the *LiftAbout* are the same principles of design and construction that have made "Shepard" the best known and most widely used electric hoist in America.

Through standardized manufacture and quantity production, we are enabled to sell these *LiftAbouts* at a remarkably low price, for the "Shepard Quality" which is built into them.

We also build electric cranes in capacities to 30 tons, and are the largest producers in America of electric hoists.



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358 Schuyler Ave., Montour Falls, N. Y.
Branches in Principal Cities
Member Electric Hoist Mfrs.' Assn.

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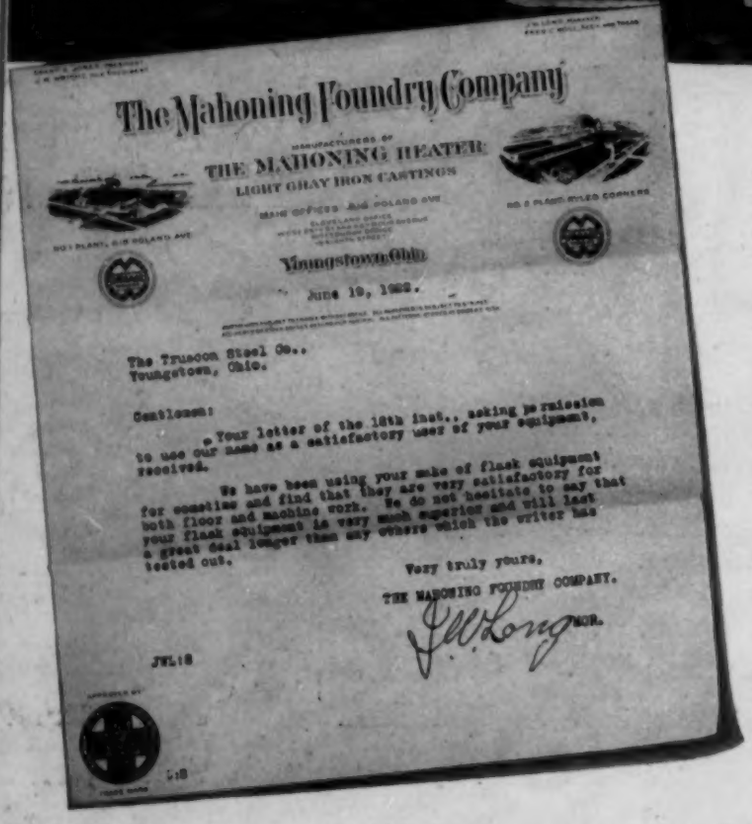
ELECTRIC CRANES & HOISTS



The Mahoning Foundry Company

MANUFACTURERS OF
THE MAHONING HEATER
LIGHT GRAY IRON CASTINGS

Youngstown Ohio

June 19, 1922.

The Truscon Steel Co..
Youngstown, Ohio.

Gentlemen:

Your letter of the 18th inst., asking permission to use our name as a satisfactory user of your equipment, received.

We have been using your make of flask equipment for sometime and find that they are very satisfactory for both floor and machine work. We do not hesitate to say that your flask equipment is very much superior and will last a great deal longer than any others which the writer has tested out.

Very truly yours,

THE MAHONING FOUNDRY COMPANY.

J. W. Long MGR.

JWL:H

Setting the Pace is an Old Story

This letter from the Mahoning Foundry Company is just another proof of the superiority of Truscon Alloy Steel Flasks. The picture shows a few 14" x 20" flasks. Each cope and drag is readily handled by one man. Notice the close fit of the pattern in the flasks shell. That means a big saving in sand and labor. Compare Truscon flasks with the bulky old wood flasks in the background of the picture and see how much floor space is saved. Rigid Truscon construction stands the daily knocks. The heavy pins and brackets do not get out of alignment.

Is it any wonder that Truscon rust resisting alloy steel flasks are the standard of equipment in more than Three Hundred of the countries largest foundries?

Truscon Steel Co.

Youngstown **Ohio**

Representatives in Principal Cities

TRUSCON ALLOY FLASKS STEEL

FOUNDRY PRODUCTS
TRUSCON STEEL CO

IRON TRADE REVIEW
Registration Applied For
The Authority of Industry National and International
Vol. LXXI Cleveland, O., December 7, 1922 No. 23

New Bookings on Heavier Scale

Many Manufacturing Consumers Place Tonnage with Mills for Forward Delivery—Pig Iron Sales Large—Automobile Industry Is Prominent in Market—Railroads Still Active—November Shows Further Substantial Gain in Pig Iron Output

ACTIVITY in future buying which is of a breadth not present in the market in some months is the outstanding feature of the iron and steel situation. Practically all the new business is for 1923 delivery and the estimated requirements upon which consumers now are closing indicates that manufacturing programs for the first three to six months are pitched on a large scale. Some unevenness in prices is developing as mill books have run down in certain lines but there is an absence of weakness anywhere. Iron and steel production is about stationary this week.

Railroad buying still is one of the mainstays of the market. Additional car awards this week total 9200, making the total in two weeks approximately 20,000. Chicago reports 35,000 cars still under active negotiation. Locomotive buying is of fair volume. The Pennsylvania railroad has signed contracts for only 100,000 tons of the 170,000 tons of steel rails it requires for 1923. The company will wait until next year to place its last half needs taking its chances of paying the $3 per ton advance now in effect. The Long Island railroad finally has contracted with the Bethlehem Steel Corp. for 8000 tons of rails.

A good total, 18,000 tons, is represented by the new structural awards of the week. The principal item was 9400 tons for the Philadelphia-Camden bridge, Philadelphia. Four highway bridges over the Missouri river now up for closing call for about 15,000 tons. The American Rolling Mill Co. requires 4000 to 4500 tons for extensions at Ashland, Ky.

Auto Plants in Market

The automobile industry has figured prominently in the new bookings of the mills. The General Motors Corp. which has been seeking a heavy tonnage of miscellaneous material has placed a portion of this business but the larger amount still is under negotiation. The sheet requirements of this consumer at present are estimated at 100,000 tons annually. The Ford Motor Co. is taking up the consideration of its steel requirements for the first quarter of 1923. An interesting statement in this connection is that the Ford company as part of its contemplated steel plant at Detroit, is planning to roll its own sheets. Other units in the industry have been buying.

Iron Buying Is Heavy

A heavy buying movement in pig iron for first quarter delivery now is under way and is spreading steadily. Some leading producers are estimating that a total of probably 1,000,000 tons will have been closed by the end of the present week. Buying has been heaviest in Detroit, Chicago, Buffalo and northern Ohio districts. Bookings by the northern Ohio group of furnace interests in the week total approximately 200,000 tons and Buffalo reports 100,000 tons closed. Automobile foundries and radiator manufacturers have been heavy buyers. The American Radiator Co. which negotiated for 70,000 tons for first half has bought a large tonnage. The United States Radiator Co. closed for 15,000 tons.

Some further breaks in prices have accompanied the buying movement in iron. Southern iron dropped to $21 but this figure now has been withdrawn. Keen competition developing in Ohio and Michigan lake territory has carried foundry iron prices to $26 furnace. Valley basic has declined at least $1 and a sale of 4000 tons is reported closed even lower.

The general price level of the market still is on the decline as reflected by IRON TRADE REVIEW composite of 14 iron and steel products which this week is down to $40.69. The composite last week was $41.40, two weeks ago, $41.78 and three weeks ago, $42.41.

Output Still on Rise

November established the third consecutive monthly gain in pig iron production which now is on the highest basis in exactly two years. Average daily output in November was 94,853 tons, a gain of 10,026 tons or 11.9 per cent over October. Furnaces in blast showed a net gain of 22 in the month raising the total increase in three months to 97 and the complete operating list to 240. Total production in November was 2,845,595 tons against 2,629,655 tons in October, a gross increase of 215,940 tons. Of this gain merchant iron furnished the disproportionate amount of 100,653 tons and steelworks furnaces only 115,287 tons.

Business Trend and Chart Section Page 1551

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Making Theories Without Facts

A CERTAIN well known business "forecaster" whose claim to fame apparently rests largely on his prodigious success in obtaining publicity, recently has painted a gloomy picture of the outlook for the steel industry. He bases his conclusions, he says, largely upon the fact that the steel industry is not yet readjusted and that it did not conform fully with the contraction of the economic cycle of 1920 and 1921. Such statements are pure absurdities.

The steel industry not only shared in the depression of 1921, but it went far beyond that. Economic authorities are in agreement that at the worst of an acute deflation period, the average for general business activities never gets below 80 per cent of the normal line. That is the level regarded as necessary to maintain the life, health and an irreducible minimum of comfort of the population. In July, 1921, however, the curtailment of the steel industry had swept operations back to a point about 20 per cent of caacity. That was the most drastic curtailment in relation to capacity of mills and blast furnaces, ever witnessed in the history of American iron and steel manufacture. No other major industry suffered so severely.

In the same vein the "expert" talks of the steel prices as too high. From the high levels of the war and 1920, Iron Trade Review composite price average for 14 iron and steel products dropped to a level only 25 per cent above the 1913 basis. The low point was touched last March, at a time when general commodity prices, as measured by the wholesale price index of the United States department of labor, were 42 per cent above prewar. No commodity group, save farm products which fell in June, 1921, to about 15 per cent above 1913, suffered such deflation as did iron and steel.

Since March iron and steel average prices have advanced to about 57 per cent above 1913. At that level they are nearly on a par with the wholesale price index which is now around 55 per cent higher than in the prewar year. The advance in steel prices has resulted from low stocks due to prolonged curtailment, and to the interruption of output by last summer's strikes, just as the tide of consumption was rising. Increased costs caused by higher fuel and labor charges, disrupted operations etc., together with the working of the law of supply and demand combined to lift steel prices. Elimination of the strike influences and the large increase in production since have resulted in a price decline of only 6 per cent in the price average on iron and steel from the strike peak. The strength of the market is revealed in continued buying and in the continued upturn of output.

Another misstatement deserves attention. It is asserted that the industry if called upon could produce steel ingots at the rate of 55,000,000 tons annually and the inference is drawn from this that a great overexpansion exists. It is folly to talk of full potential ingot production of the country ever being obtained. Inconceivably ideal conditions would be required. Even wartime stress and stimulation could not push ingot output above 86 per cent of potential capacity. This rate was attained in 1916. According to Iron Trade Review trend line of growth based on the average increase of 25 years, production in October was at the rate of approximately 86.6 per cent of normal. In October the actual production of ingots was at the annual rate of nearly 40,000,000 tons. This indicates that normal production today would be about 45,000,000 tons. This latter output would represent about 78 per cent of the potential capacity of 58,000,000 tons. In 1913 and 1920, both good years in the steel industry, the rate of production was 78.8 and 78.2 per cent of the total capacity respectively.

Whatever readjustment the iron and steel industry may further require manifestly it is not

so much as some professional diagnosticians of economic ills may apply to themselves with profit to the whole country, especially when they so glibly parade their own theories as actual facts.

Steel Exports Are in Check

INDICATIONS are that exports of iron and steel from the United States in 1922 will fall short by approximately 200,000 tons of last year's total of 2,151,650 tons. If this proves true, the 1922 tonnage will be the smallest since 1914 when 1,549,554 tons was exported. October statistics, now available, show exports totaled 1,697,978 tons for the first 10 months of this year.

This tonnage, however, without the unknown business of November and December, places 1922 ahead of any prewar year except the three immediately preceding the commencement of hostilities in Europe. Those years, 1911, 1912, and 1913, generally were prosperous years the world over and in income tax and other computations have been accepted as normal periods.

Since then war requirements have sent steel exports to unprecedented heights and the aftermath has brought them back to earlier lower levels. The period of readjustment still is in progress and normal requirements are not yet permitted to express themselves. Foreign trade statistics of England, Belgium and Germany equally reflect this fact. Steel exports from the United States are going forward in as large tonnages as domestic and world conditions permit. Until industrial and financial affairs the world over more nearly approach the point of stabilization, American steel exports cannot be expected to strike a natural stride.

Coal Industry Menaces Industry

WHAT is wrong with the coal industry again is set forth in a very lucid and definite fashion by Secretary Hoover in his annual report to the President. The present unsatisfactory situation in the industry with its menace to the country's economic future is attributed largely to overexpansion and to the intermittency of operations.

The statement of those factors contributing to make the coal industry "a badly functioning industry" as it has been called is not new to the public at large. But Secretary Hoover goes on to clinch the fact notably in the bituminous industry. He says that the 8000 bituminous mines in the country have an annual capacity of about 850,000,000 tons or about 300,000,000 tons above normal national needs. Apart from strike suspensions, preliminary investigation shows that the best record of bituminous mines operations in recent years was 249 days out of a possible 308 with a general average of about 210. This compares with 295 days in England and over 300 days in Germany. However, this is an even more favorable statement for the American industry than the conditions actually are shown upon further analysis. Apart from the mines which are operated regularly for certain metallurgical and railroad supplies, the remainder of the bituminous industry has been active on an average less than 180 days per year. Some mines operate less than 100 days. The result is the perpetual labor difficulties.

The remedy, Secretary Hoover says, lies in three directions, namely, ample transportation, greater freedom from strikes by a better development of employment relations and in some degree, overcoming the seasonal character of the industry.

Certainly there can be no sensible disagreement that the coal industry demands some very practical and vigorous treatment to set it right. The first step in this direction is being provided through the fact finding commission of the government now at work. Whether anything can be accomplished, however, to head off another national coal strike next April, advance rumblings of which now are plainly heard, is a question. As the conditions in the coal industry now stand, they are a permanent menace to general industry and to the staple prosperity of the country.

Production Still on the Rise

DESPITE a current belief that works operations have been advanced about as far as various makers can hope to see them go in view of winter difficulties, pig iron production in November registered another rise. While the increase was not particularly striking on the basis of total output, November having 30 days as compared with 31 in October, the gain in average daily production was significant. Production in November reflected the full effect of the 29 blast furnaces which were placed in operation at various dates in October, especially those going in during the second half of the month. In addition, a net gain of 22 stacks in November pushed output upward.

For four consecutive months pig iron production has continued upward, and has now reached the highest level in two years or since November, 1920. Output is now 20.5 per cent above the midsummer peak which was attained in June just before many furnaces were forced to curtail operations as a result of the coal strike. Steel ingot production in October was 9 per cent above the high point of June.

It is appreciated, of course, that winter conditions will affect furnace and steelworks operations to some extent, yet indications up to this point in the month seem to favor another increase of output in December. The country today is making iron and steel at a rate far above the prewar basis and not greatly below the record years of the war period, 1916, 1917 and 1918.

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products, Yesterday, One Week, One Month, Three Months, One Year and Nine Years Ago

December 6, 1922	November 29, 1922	November, 1922	September, 1922	December, 1921	December, 1913
$40.69	$41.40	$42.08	$43.79	$33.99	$23.29

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

SCRAP PRICES, PAGE 1594, WAREHOUSE, PAGE 1586, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 1590

Iron and Steel Prices

Pig Iron

Bessemer, valley	$30.00
Bessemer, Pittsburgh	31.77
Basic, valley	25.50 to 26.00
Basic, Pittsburgh	27.27 to 27.77
Basic, Buffalo	26.00
Basic del., eastern Pa.	27.50 to 28.00
Malleable, valley	27.00
Malleable, Pittsburgh	28.77
Malleable, Chicago	28.00
Malleable, Buffalo, furnace	25.50 to 26.00
Malleable, del., eastern Pa.	28.00 to 29.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	30.13 to 30.26
No. 1X, Buffalo	26.00 to 26.50
No. 2 foundry, valley	26.00
No. 2 foundry, Pittsburgh	27.77
No. 2 foundry, Buffalo	25.00 to 25.50
No. 2 foundry, Chicago	28.00
No. 2 foundry, Granite City	31.00 to 32.00
No. 2 foundry, Ironton furnace	27.00 to 28.00
No. 2 foundry, Cleveland del.	27.00 to 27.50
No. 2 foundry, del., Phila.	27.26 to 28.64
No. 2 foundry, N. J. tidewater	28.28 to 28.64
No. 2X, eastern del., Phila.	28.76 to 29.13
No. 2X, east. N. J. tidewater	28.78 to 29.64
No. 2X, eastern del., Boston	30.65 to 31.65
No. 2X foundry, Buffalo fur.	25.50 to 26.00
No. 2X, Buffalo del. Boston	30.41 to 30.91
No. 2 southern, Birmingham	22.00 to 23.00
No. 2 southern, Cincinnati	26.05 to 27.05
No. 2 southern, Chicago	27.01 to 28.01
No. 2 southern, Philadelphia	29.80 to 30.80
No. 2 southern, Cleveland	28.01 to 29.01
No. 2 southern, Boston (rail)	31.61 to 32.61
No. 2 southern, St. Louis	27.17 to 28.17
No. 2X, Virginia furnace	28.50
No. 2X, Virginia Phila.	33.67
No. 2X, Virginia Jersey City	34.04
No. 2X, Virginia Boston	34.42
Gray forge, eastern Pa.	28.00
Gray forge, val. del. Pitts.	27.27 to 28.27
Low phos., standard, valley	36.00 to 37.00
Low phos., standard, Phila.	Nominal
Low phos., Lebanon furnace	30.00
†Low phos. British tidewater	28.00 to 29.00
Charcoal, Birmingham	32.00 to 33.00
Charcoal, Superior, Chicago	36.15

Silvery Iron
Jackson County, Ohio, furnace

8 to 9 per cent	$35.50
9 to 10 per cent	37.50
10 to 11 per cent	39.50
11 to 12 per cent	42.00
12 per cent	44.50
13 per cent	47.00

Bessemer Ferrosilicon
Jackson County, Ohio, furnace

10 to 11 per cent	$44.50
11 to 12 per cent	47.80

Ferroalloys

Ferromanganese, 78 to 82 per cent domestic, f.o.b. furnace	$100.00
Ferromonganese, delivered, Pittsburgh	104.79 to 104.91
†Ferromanganese, 79 per cent, English, c.i.f. Atlantic port	100.00 to 100.68
Spiegel, 19 to 21 per cent furnace spot nominal	36.00 to 37.00
†Spiegel, 20 per cent English, c.i.f. Atlantic port	nominal
Ferrosilicon, 50 per cent contract freight allowed	82.50 to 85.00
Ferrotungsten, standard, per pound contained	90.00 to 95.00

†Duty paid.

Ferrochrome, 60 to 70 chromium, 4 to 6 carbon, per pound contained, makers plant	13.00c to 14.00c
Imported ferrochrome, 4 to 6 per cent carbon	12.00c to 12.50c
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producers plant, per net ton	$200.00

Coke

Beehive, Ovens

Connellsville furnace	$6.75 to 7.25
Connellsville foundry	7.50 to 8.00
Pocahontas furnace	nominal
Pocahontas foundry	nominal
New River furnace	9.00 to 10.00
New River foundry	12.00
Wise county furnace	6.00 to 7.00
Wise county foundry	7.00 to 8.00
Alabama furnace	7.00 to 8.00
Alabama foundry	7.50 to 8.50

By-Product

Foundry, Newark, N. J., del.	$12.84 to 12.91
Foundry, Chicago, ovens	15.00
Foundry, Boston, delivered	16.00
Foundry, Granite City, Ill., ovens	14.00
Foundry, Alabama	8.00 to 8.50

Semifinished Material

BILLETS AND BLOOMS
(4 x 4-inch)

Open-hearth, Pittsburgh	$37.50 to 38.00
Open-hearth, Youngstown	37.50 to 38.00
Open-hearth, Philadelphia	45.17*
Bessemer, Pittsburgh	37.50 to 38.00
Bessemer, Youngstown	37.50 to 38.00
Forging, Pittsburgh	42.50 to 47.50
Forging, Philadelphia	50.17

SHEET BARS

Open-hearth, Pittsburgh	$37.50 to 38.00
Open-hearth, Youngstown	37.50 to 38.00
Bessemer, Pittsburgh	37.50 to 38.00
Bessemer, Youngstown	37.50 to 38.00

SLABS

Pittsburgh and Youngstown	$37.50 to 38.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$45.00 to 47.50
Grooved skelp, Pittsburgh	2.00c
Universal skelp, Pittsburgh	2.00c
Sheared skelp, Pittsburgh	2.00c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	1.90c to 2.00c
Structural shapes, Phila.	2.225c to 2.325c
Structural shapes, New York	2.24c to 2.34c
Structural shapes, Chicago	2.10c to 2.20c
Tank plates, Pittsburgh	1.90c to 2.00c
Tank plates, Philadelphia	2.225c to 2.325c
Tank plates, New York	2.24c to 2.34c
Tank plates, Chicago	2.10c to 2.30c
Bars, soft steel, Pittsburgh	1.90c to 2.00c
Bars, soft steel, Phalidelphia	2.325c
Bars, soft steel, New York	2.34c
Bars, soft steel, Chicago	2.00c to 2.10c
Bars, forging, Pittsburgh	2.60c to 2.75c
Bars, rail steel, Chicago	2.00c
Reinforcing bars, Pittsburgh	1.90c to 2.00c
Bar iron, common, Phila.	2.275c to 2.325c
Bar iron, common, New York	2.29c to 2.34c
Bar iron, common, Chicago	2.35c to 2.50c

Hoops, Bands, Shafting

Hoops, Pittsburgh	2.90c
Bands, Pittsburgh	2.90c
Cotton ties, per bundle Pitts.	$1.15
Cold finished steel bars, Pittsburgh base	2.50c
Steel shafting	2.50c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open hearth rails, mill	43.00
Relaying rails, St. Louis	27.00 to 31.50
Relaying rails, Pittsburgh	28.00 to 32.00
Light rails, 25 to 45, mill	2.00c to 2.15c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.75c to 2.85c
Spikes, small and boat Pitts.	3.50c to 3.75c
Spikes, railroad, Chicago	2.85c to 3.00c
Track bolts, Pittsburgh	3.85c to 4.50c
Track bolts, Chicago	3.85c to 4.00c
Tie plates, Pittsburgh	2.35c to 2.50c
Tie plates, Chicago	2.35c

Wire Products

100 lbs. to Jobbers in Carloads

Wire nails, Pittsburgh	2.70c
Plain and annealed wire, Pitts.	2.45c
Galvanized wire, Pittsburgh	2.95c
Barbed wire, painted, Pitts.	2.85c
Barbed wire, galv., Pittsburgh	3.35c
Polished staples, Pittsburgh	2.85c
Galvanized staples, Pittsburgh	3.35c
Coated nails, count keg, Pitts.	2.20c
Woven wire fencing (retailers)	68 off
Woven wire fencing (jobbers)	70½ off

Chain, Piling, Strip Steel

Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.00c to 2.05c
Hot rolled strip steel, Pittsburgh stamping quality	2.90c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base	4.50c

Sheets

SHEET MILL BLACK

No. 28, open-hearth, Pittsburgh	3.25c to 3.35c
No. 28, bessemer, Pittsburgh	3.25c to 3.35c
No. 28, open-hearth, Phila.	3.575c to 3.675c
No. 28, open-hearth, Chicago	3.59c to 3.69c

TIN MILL BLACK

No. 28, open-hearth, Pittsburgh	3.35c
No. 28, open-hearth, Chicago	3.69c

GALVANIZED

No. 28, open-hearth, Pittsburgh	4.35c
No. 28, bessemer, Pittsburgh	4.35c
No. 28, open-hearth, Phila.	4.675c
No. 28, open-hearth, Chicago	4.64c to 4.69c

BLUE ANNEALED

No. 10, open-hearth, Pittsburgh	2.50c
No. 10, bessemer, Pittsburgh	2.50c
No. 10, open-hearth, Phila.	2.825c to 2.925c
No. 10, open-hearth, Chicago	2.84c to 2.89c

AUTOMOBILE SHEETS

No. 22 Pittsburgh	4.70c to 5.00c

Tin Plate

Per 100 lb. box.

Tin plate, coke base, Pitts.	$4.75

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	66	54½
1 to 1¼-inch, butt iron	34	19

Boiler Tubes

Carload Discount 4 Points Larger

Steel, 3¼ to 13 inches, l. c.	48 off
Charcoal iron, 3¼ to 4½ inches l. c. l.	16 off
Seamless rot rolled, 3¼ to 4-in., l. c.	1.45 off

Cast Iron Water Pipe

Class B Pipe

Four-inch, Chicago	$55.20 to 56.20
Six-inch and over, Chicago	51.20 to 52.20
Four-inch, New York	60.30
Six-inch and over, New York	55.30
Four-inch, Birmingham	47.50 to 48.00
Six-inch and over, Birmingham	43.00 to 43.50
Three-inch, Birmingham	56.50 to 57.00

Class A pipe is $4 higher than Class B.
Standard fittings, Birmingham, base, $110.00
6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	Dec. 6, 1922	Nov. 1922	Sept. 1922	Dec. 1921
PIG IRON				
Bessemer, valley, del., Pitts.	$31.77	$33.77	$35.27	$21.96
Basic valley	25.50	29.77	34.27	20.61
*No. 2 foundry, del., Pittsburgh	27.77	30.17	37.03	22.26
*No. 2 foundry, Chicago	28.00	30.60	32.00	20.00
Lake Superior charcoal, Chicago	36.15	36.15	36.15	31.50
Malleable, valley	27.00	29.60	34.00	20.00
Malleable, Chicago	28.00	30.60	32.00	20.00
*Southern No. 2, Birmingham	22.00	24.00	26.25	17.15
*Southern Ohio, No. 2, Ironton	27.00	29.25	33.75	20.00
Basic eastern del., eastern Pa.	27.65	28.00	30.00	20.80
**No. 2X, Virginia furnace	28.50	31.40	33.00	22.50
**No. 2X, eastern del. Phila.	28.76	30.50	34.25	22.00
Gray forge val. del., Pittsburgh	27.27	29.77	36.02	21.56
Ferromanganese, del., Pittsburgh	104.91	104.91	80.59	60.00
SEMIFINISHED MATERIAL—				
Sheet bars, bessemer, Pittsburgh	37.50	38.80	39.50	30.00
Sheet bars, open-hearth, Pittsburgh	37.50	38.80	39.50	30.00
Billets, bessemer, Pittsburgh	37.50	38.80	39.50	29.00
Billets, open-hearth, Pittsburgh	37.50	38.80	39.50	29.00
FINISHED MATERIAL				
Steel bars, Pittsburgh	**2.00**	2.00	2.00	1.50
Steel bars, Chicago	**2.00**	2.00	1.98	1.60
Steel bars, Philadelphia	2.325	2.325	2.375	1.85
FINISHED MATERIAL Continued				
Iron bars, Philadelphia	$2.275	$2.325	$2.325	$1.85
Iron bars, Chicago mills	2.35	2.50	2.25	1.65
Beams, Pittsburgh	1.90	2.00	2.00	1.50
Beams, Philadelphia	2.275	2.325	2.375	1.85
Beams, Chicago	2.10	2.10	2.08	1.65
Tank plates, Pittsburgh	1.90	2.00	2.20	1.50
Tank plates, Philadelphia	2.275	2.325	2.575	1.85
Tank plates, Chicago	2.10	2.10	2.08	1.60
Sheets, blk., No. 28, Pittsburgh	3.25	3.35	3.40	2.95
Sheets, blue anl., No. 10, Pitts.	2.50	2.60	2.50	2.25
Sheets, galv., No. 28, Pittsburgh	4.35	4.35	4.40	3.95
Wire nails, Pittsburgh	2.70	2.70	2.70	2.75
COKE—				
Connellsville furnace, ovens	6.50	7.10	11.00	2.80
Connellsville foundry, ovens	7.50	8.40	12.75	4.00
OLD MATERIAL—				
Heavy melting steel, Pittsburgh	20.00	20.40	19.50	14.25
Heavy melting steel, east. Pa.	16.50	16.70	17.10	11.90
Heavy melting steel, Chicago	16.75	17.40	18.15	11.35
No. 1 wrought, eastern Pa.	19.00	21.20	21.25	15.75
No. 1 wrought, Chicago	17.00	18.10	19.95	12.10
Rails for rolling, Chicago	17.75	18.90	19.40	12.90

*1.75 to 2.25 silicon **2.25 to 2.75 silicon

Heavy Tonnage of Iron Closed

First Quarter Buying Movement Now in Full Swing—Total of 1,000,000 Tons To Be Closed Is Predicted—American Radiator Co. Buys Against Inquiry for 70,000 Tons—Prices Dip Further, $21 Appearing in South

Philadelphia, Dec. 5.—Demand for pig iron in this district has broadened considerably and first quarter buying covering has been started. A number of melters recognized as astute buyers either have bought or have tonnage under negotiation. A heavy tonnage for the pipe foundries is pending. The Westinghouse Electric & Mfg. Co. is about to close on 1200 to 2000 tons of foundry iron. A melter in this district placed 2400 tons of foundry iron. Numerous smaller lots have been closed and it is estimated that eastern furnaces have added fully 20,000 tons to their order books the past week. Current inquiries indicate an extension of the present buying movement.

Prices are unchanged but the furnaces are less disposed to sell at present figures owing to high costs. The market is considered $27 to $28, base furnace, plus $1 for silicon differentials. Gray forge is somewhat higher and considerable tonnage has been sold around $28, delivered eastern Pennsylvania. On the other hand, a round tonnage of malleable was closed at $27, eastern Pennsylvania furnace. The first large transaction in domestic low phosphorus market in some months involves 1000 tons of copper-bearing metal at $30, furnace. Domestic copper-free iron is held at $35, furnace, but English standard low phosphorus is obtainable at $28, duty paid. One eastern consumer required a postponement of November shipments of basic into December and now asks a further extension to late December or early January. Another eastern buyer closed for 1500 tons of basic and a third consumer has tonnage pending. Basic is unchanged but tending higher. Virginia foundry iron continues at $28, furnace, plus 50 cents silicon differentials with small sales. The Chester, Pa., furnace is expected to blow in shortly, probably sometime this month.

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Sales Heavy; Price Firming

Chicago, Dec. 5.—The turn in the pig iron market has arrived and inquiry and sales are heavy. Prices are firming up after a slight recession on the first buying. After a long period of waiting, buyers are coming into the market for their first quarter needs, and sales to date are encouraging. Lots of 5000 to 7000 tons have been booked, and 1000 and 2000 tons of foundry and malleable iron figure in the week's business. Prospective tonnage is larger. Northern iron for Chicago delivery is now $28, furnace, while prices quoted in competition outside of this district figure back under $28, furnace. The low point apparently was $27, and it is probable that this cannot be done now. Southern iron has reached $21, Birmingham, though some makers are holding for $23 and others for $25. The sale of 1000 tons of southern iron at $22, furnace, is reported. One thousand tons of malleable iron were sold to a Wisconsin user. Inquiry includes lots of 3000 to 5000 tons, several 1000 tons and more of 200 to 500 tons. Detroit and Toledo furnaces are selling in western Michigan at $26, furnace, this territory usually buying in Chicago. Lake Superior charcoal iron is quiet; the price is unchanged.

Declines Not Yet Arrested

Pittsburgh, Dec. 5.—Pig iron still is declining and practically all grades

are $1 lower than one week ago. A large number of foundry iron consumers are inquiring for an aggregate of 20,000 to 30,000 tons for the first quarter but only one or two plants have closed including one of the smaller sanitaryware manufacturers in this district. It purchased approximately 2000 tons at an attractive figure dividing the tonnage between two producers. Several other melters declare intensions of buying 1000 tons or more within the next week or two and one or two will take up to 10,000 tons for the quarter. Spot No. 2 foundry now is quoted at $26, valley. One inquiry now current calls for 500 tons of No. 2X iron for a Pittsburgh district consumer. More basic activity is noted, a sheet mill on the Ohio river closing on 4000 tons for December and the Colonial Steel Co. on 750 tons for immediate delivery. The latter was taken at a figure slightly under $27, valley and the former at even a lower price. One iron producer again entered the market for 500 tons, bringing its recent purchases in the open market to approximately 2500 tons. For the last lot it paid $26, valley, but now easily could obtain a $25.50 quotation since small lots have been closed at that level. The Allegheny Steel Co. continues to withhold its purchase of 3000 to 5000 tons. One merchant producer has turned down an offer of $29, valley, for 150 tons of bessemer, but since has sold 300 tons at $30, valley. Bessemer and basic averages for November as compiled by W. P. Snyder & Co. are $31.75 and $27.60, respectively, reductions of $1.75 in bessemer and $2.40 in basic from October.

Heavy Sales at Buffalo

Buffalo, Dec. 5.—The American Radiator Co. is believed to have bought 15,000 tons of foundry from a local furnace during the past week and additional tonnage making a heavy total from other sources. The United States Radiator Co. is understood to have contracted for a similar tonnage. The American Radiator Co. has been figuring up to 70,000 tons equally divided between the first and second quarter. The United States company's inquiry was for up to 15,000 tons. In addition to this reported purchasing, other buyers are said to have come into the local market and to have bought rather extensively. A conservative estimator places the iron booked in furnaces of this district during the week at 100,000 tons. It is fairly definite that the price on these large tonnages was not more than $25 for No. 2 plain, (1.75 to 2.25 silicon) $25.50 for No. 2X, (2.25 to 2.75 silicon) and $26 for No. 1X (2.75 to 3.25 silicon). Buying of 5,000-ton lots has been a feature of the market, the general tenor of which appears to be that it has gone as low as it will for some time.

Low Prices Start Buying

Boston, Dec. 5.—The low prices for pig iron at Buffalo which at first met with comparatively little response among New England foundrymen, recently have brought out a heavy tonnage for first quarter delivery. Approximately 12,000 tons of Buffalo iron was sold in New England during the last week. Of this amount 3000 tons was taken by a textile machine manufacturer, 1000 tons by a valve and fittings manufacturer, 1000 tons in two lots of 500 tons each by a textile machine interest, and the balance was made up mostly of 300, 400 and 500 tons lots. The two principal Buffalo interests are quoting a $25 base, furnace or $29.97 delivered, but sales have been reported at this same price for No. 2X, 2.25 to 2.75 silicon. Foreign iron continues to be sold, although in relatively small lots. Scotch iron has sold as high as $28 Boston during the week, but distress foreign tonnage has appeared at New York at $26 duty paid on cars, which means $29.65 delivered New England, or 25 cents below the Buffalo delivered price. Inquiry for further first quarter tonnage is exceedingly light; one Boston foundry is asking for 500 tons of 5 to 6 per cent silicon iron. Other than this there is practically no open inquiry. However, in the opinion of one authority 40,000 or 50,000 still will be placed in New England for first quarter delivery.

Extended statistics of European iron and steel production, American iron and steel exports and imports, page 1596

First Quarter Buying Heavier

New York, Dec. 5.—First quarter pig iron buying finally is getting a start in this district. At least 15,000 tons of foundry iron for that position was sold here during the past week. Current inquiries for first quarter involve about 5000 tons. Some melters have tried to place full first half requirements but the furnaces were not ready to close so far ahead. The Richardson & Boynton Co., Dover, N. J., took 3000 tons for first quarter, of which 2000 went to Buffalo and 1000 to a New Jersey furnace. The Burnham Boiler Co. placed a moderate tonnage. The Eastern Malleable Iron Co. closed on 1000 tons of malleable for Wilmington, Del.

Buffalo foundry is bringing $25 furnace for 1.75 to 2.25 silicon, plus 50 cent silicon differentials. Buffalo malleable has been sold at $25.50 furnace. Eastern Pennsylvania foundry continues obtainable at $27 furnace, for 1.75 to 2.25, plus $1 silicon differentials. More eastern Pennsylvania malleable has been sold at $27 furnace. A Connecticut user wants 500 tons of malleable bessemer for first quarter.

Heavy sales of Alabama foundry were made during the week at $21 base Birmingham, but the one maker which took a large tonnage at this price now has withdrawn.

The American Steel & Wire Co. has purchased 40000 tons of English low phosphorus iron for its Worcester, plant. It is understood that the price was close to $28 duty paid tidewater. English and continental foundry ranges from $26 to $26.50 and Scotch foundry from $27 to $28, all duty paid tidewater.

The Essex Foundry Co., Newark, N. J., is inquiring for a substantial tonnage of iron for first quarter. The Central Foundry Co. is inquiring for a large tonnage for first quarter for its various plants.

Buying Begins in Volume

Cleveland, Dec. 5.—A large tonnage of pig iron has been booked with lake furnace interests for first and second quarters, and the buying movement now is fairly under way. Around 200,000 tons, mostly for first quarter, was closed with the northern Ohio group of furnaces last week and this. One interest took 65,000 tons, one-fourth of which is for the second quarter and which includes several good sized lots. This company is negotiating for 25,000 tons additional. Among the buyers in the market are the General Electric Co., Worthington Pump & Machinery Co., Westinghouse Electric & Mfg. Co., and the American Radiator Co., which is understood to have closed for a tonnage at Buffalo. Some representative lake furnace interests estimate the combined tonnage to be placed last week and this, in the general market, at 1,000,000 tons. Interest centers largely in sales in northern Ohio and Michigan districts.

The Detroit market openly is quotable at $27, though this has been shaded 50 cents in some instances. The Cleveland market is $27 to $27.50, delivered. Buffalo iron is being offered freely in Cleveland at $27.50, delivered. A Cleveland maker also is quoting this price. Malleable is offered by a Cleveland maker at $26.50, furnace, or about $27, delivered Cleveland. West of this immediate district quotations as low as $26, base furnace, are named. While certain leading furnace interests are making a drive for business, and competition is keen, there are indications that the market is more stable than it has been in weeks. One of the largest merchant interests expects to be sold up this week for the output of some of its furnaces for the first quarter. Some southern iron was sold this week at $27.01, delivered in Cleveland, or $21, Birmingham. The American Raidiator Co. wants 1000 tons for Detroit, and the Westinghouse company, 900 tons for Pittsburgh. The Pittsburgh Valve & Fittings Co. is understood to have closed for 250 tons for Barberton. A consumer in this district asks 200 tons of silveries. Silveries have declined $2, the 6 per cent grade now being offered at $33, Jackson county furnace.

Negotiations are in progress on several lots of basic including one around 5000 tons. The price as nearly as can be defined is not less than $26, valley.

Some Tonnage Sold at $21

Cincinnati, Dec. 6.—The southern pig iron market broke to $21 late last week and came right back to a $23 Birmingham base after the single furnace making the special price disposed of an alloted tonnage. The price was made by the Tuscaloosa furnace and was in effect only a part of Friday and Saturday during which time several thousand tons were snapped up by consumers mostly located in proximity to the furnace.

Practically all furnaces now are quoting $23, Birmingham, for both spot and first quarter. The southern Ohio market has slipped to $27 with a majority of

recently reported sales at $27.50. Furnaces are quoting at a range of $27 to $28, Ironton base, for December and first quarter.

New inquiries for first quarter include 2000 tons for an Indiana melter equally divided between northern and southern foundry. Another Indiana consumer wants 2000 tons of southern and still another, 2000 tons of northern. An Indiana stove manufacturer has inquired for 2000 tons of southern. A Marion, O., consumer asks 300 tons of northern foundry, a Michigan melter, 1000 tons and two northern Ohio melters 1000 tons of northern foundry and 500 tons malleable respectively. Other inquiries include 500 tons and 300 tons of malleable.

The Williamson Heating Co., Cincinnati, has placed 1500 tons of southern foundry at a price reported to be under $23, Birmingham. The Columbia Sanitary Co., Louisville, Ky., took 2000 tons of the $21 iron for prompt delivery and a consumer in the Cincinnati district placed an order for 900 tons of 8 per cent silvery. Sales were entered on Saturday of 5000, 3000 and 1000 tons of southern foundry for first quarter delivery in the Cincinnati territory, which were not included in the $21 transactions.

Inquiry Is Broadening

St. Louis, Dec. 4.—The volume of inquiry for pig iron has been augmented considerably and there is every indication that users are about to enter the market in force.

No pig iron offerings have been heard of under $23 base, and two leading producers are considerably above that, one in particular still holding to $25. Northern iron still is quoted nominally at $30, but this figure has been shaded, and it is known that at least two furnaces would take large orders at $28 for first quarter.

Among the sales reported was 500 tons of foundry to a melter in the district proper; 300 tons to a Quincy, Ill., user; 150 tons to a local stove manufacturer and smaller lots aggregating about 800 tons. The leading local producer reports inquiries for foundry iron totaling from 25,000 to 30,000 tons besides several thousand tons of malleable. A canvass of leading melters of the district indicates that the total melt during November was 6½ per cent larger than in October and approximately 18 per cent larger than for the corresponding month last year.

Buying Movement Awaited

Birmingham, Ala., Dec. 4.—Southern pig iron interests still are looking forward to a buying movement. In the meantime, sales are confined mainly to small tonnages for delivery during the next quarter. Reports are current that some business, involving 15,000 tons, has been placed, but it is difficult to state what price, applied, if such a sale was consummated. The Alabama Co. has withdrawn from the market, having sold much of its probable make. This company will blow in a second furnace at Gadsden about Jan. 15. The Central Iron & Coal Co. is reported to have taken on some additional business. Sales have been made in this market at $23 and $24, though the larger and more active furnace interests quote $25. It has been heard that $22.50 has been accepted.

Spot Furnace Coke Down

Connellsville Market $6.25 to $6.75—Contracts Closed Under $7—Foundries Show More Interest in First Quarter

COKE PRICES, PAGE 1530

Pittsburgh, Dec. 5.—As beehive coke production is approximating or exceeding the 1920 rate, consumers have far less apprehension concerning their current and future supplies than was shown six or eight weeks ago. The position of buyers and sellers is the reverse of what it was then; consumers now wait for producers to make the overtures. Having arranged for December tonnages, users indicate they will delay for a week or more the making of contracts for general needs. In the meantime several additional contracts entered into some time ago have been adjusted and brought more in accord with going market levels. In one or two instances contracts for December tonnages were closed under $7, but $7 or higher is usually named as a quotation on extended delivery. Coke users state they prefer to wait rather than to act on such offers. The spot market on standard furnace coke has dropped another 50 cents per ton and now is quotable at $6.25 to $6.75, ovens. Among those closing at the minimum is the E. & G. Brook Iron Co. Medium and high sulphur coke continues to appear from time to time and is sold at $5 up. With only one or two special brands of standard selected foundry coke being held at $8.50, ovens, customers are bringing pressure for reductions, since the regular market on the foundry grade is quoted generally at $7.50 to $8, ovens. Occasionally a lower price is heard but this is on coke which is not strictly standard selected 72-hour fuel. Interest is manifested by foundries in first quarter prices on coke but makers so far have not named a figure for that period. Among those seeking quotations on comparatively fair sized tonnages is a nearby foundry interest which wants 1000 tons. Production, according to the *Connellsville Courier*, for the week ended Nov. 25 was 201,100 tons as compared with 182,380 tons the preceding week.

Deliveries Still Behind

Boston, Dec. 5.—Demand for coke from New England foundries continues strong, and deliveries at present are reported further behind than a week ago. This is due to the rush of shipping instructions at the first of the month. The price announced for December by the by-product producers is $16, delivered, the same as that in effect the latter part of November. Beehive coke is coming into Connecticut in larger volume and spot tonnage is offered at prices on a level with the contract price of the by-product fuel.

Selling for First Quarter

New York, Dec. 5.—Several thousand tons of standard foundry coke for first quarter delivery to consumers in this district have been booked by a Connellsville maker during the week. This business was taken on a sliding scale basis, shipments to be billed at market prices prevailing at the time they go forward. Other Connellsville makers have not yet opened their books for the first quarter, but are expected to do so within the next week. It is intimated that most of the producers will name definite prices rather than the sliding scale basis. Current demand for prompt foundry coke is much better than a week ago, due to the desire of numerous consumers to accumulate tonnages for emergencies. The price on Connellsville foundry coke for prompt shipment ranges from $7.75 to $8.50, the market being firmer than a week ago. All of the by-product cokemakers in this general territory are considerably behind in their deliveries. The Seaboard By-Products Coke Co. continues to quote $12.84 to $12.94, delivered at Newark and other northern New Jersey points.

Connellsville Prices Unsteady

Cincinnati, Dec. 5.—Connellsville coke price are a little unsteady and furnace fuel is reported to have been shaded to $6.50, ovens. It is said consumers are having no trouble in placing tonnage for prompt delivery at this price. Standard foundry coke is obtainable at $7 to $7.50. Little coke of either grade is being sold in this market. The car shortage continues. Consumers are urging shipment of tonnage due on contracts. Aggregate sales for the past week fell below an average day's tonnage in normal times. Apart from Connellsville, current schedules are unchanged and the market is steady.

Foundries Accumulating Stocks

St. Louis, Dec. 4.—Demand for coke from all sources continues active and prices are steady. Shipments from Connellsville and other eastern producing points are better and foundries are beginning to accumulate stocks. Producers and selling say there is an urgent demand from industrial users. The St. Louis Coke & Chemical Co. reports the movement of a train of 52 cars of coke to the Omaha metropolitan utilities district. There is no change in the dull condition of the coal market.

Good Demand in South

Birmingham, Ala., Dec. 4.—Coke production is holding up, and demand continues in good volume. Further improvement is expected in railroad service, and a 75 per cent car supply will be available in this district before long. The Alabama By-Products Corp. is now trying out the additional 25 koppers by-product ovens at the Tarrant City plant, and by the first week in January the company expects to have all of its 75 ovens in full operation. This company has already made arrangements to sell the increased production. Coke prices still are around $8 to $8.50 in the Birmingham district.

Buys 10,000 Tons Around $7

Philadelphia, Dec. 5.—Furnace coke is slightly easier. One eastern furnace has bought high-grade spot furnace fuel at $6.75, Connellsville, and another has bought 10,000 tons for December around $7.

Buy First Quarter Bars

Consumers Actively Closing on Requirements—Some Mills Not Inclined To Accept New Business Due to Backlog—Consumption Heavy

BAR PRICES, PAGE 1530

Chicago, Dec. 5.—With bookings of new tonnage greater than shipments from mill, it has been necessary during the past few days for an important steel producer at Chicago to turn down some offered business in soft steel bars and other finished steel because of inability to meet delivery requirements. New business is coming out at a less rate than during the past few weeks. Consumption of steel however, is not decreased and delivery on contracts is being sought continually. It is not to be expected that the recent scale of buying would be continued indefinitely, and the true test of the market is in the consumption of steel by its buyers. Agricultural implement manufacturers are increasing their inquiries for first quarter of 1923. Soft steel bars at Chicago are quoted 2.00c to 2.10c, Chicago mill. It appears that mills at Pittsburgh are quoting 1.90c to 2.00c, mill, with occasional shading. Some eastern mills are quoting 2.00c for carload lots and 2.10c for smaller business.

Bar iron has broken from its firm price of 2.50c, Chicago mill, and is now being quoted at 2.35c to 2.50c, Chicago mill. One important producer has resumed operation, single turn, with sufficient business on books for a month's operation. Demand for this product is not strong.

Sales of rail steel bars are less than formerly, as a number of classes of consumers are out of the market to a great extent. This material remains at 2.00c, Chicago mill, and some producers have sufficient orders on books to insure operation through the year.

Demand Is Heavier

Boston, Dec. 5.—Demand for soft steel bars has noticeably increased during the last week. One maker reports sales of 1500 tons at 2.00c, Pittsburgh. Another maker, however, is shading this price and approximately 500 tons have been placed at 1.95c, Pittsburgh. The bulk of the business is with automobile parts manufacturers.

Several Have 2.00c Minimum

Pittsburgh, Dec. 5.—Several merchant steel bar sellers have a minimum of 2.00c, base Pittsburgh, although certain consumers still are able to purchase tonnages at the 1.90c figure. While nothing as yet has been definitely announced by large producers as to first quarter prices, it is intimated that specifications for shipment during that period will be extended and accepted at the old price. The majority of new buyers are paying the 2.00c price on both spot and future business. Current orders usually comprise 50 to 200 tons.

The automotive industry continues a large consumer and the agricultural implement trade too, is active. That independent producers still have room on their order books for business, is indicated by the fact that on most sizes two to three weeks' deliveries are possible.

Double refined iron continues quotable at 4.50c, base Pittsburgh, when no scrap is used in the mixture. Regular refined iron in carloads continues at 2.60c, the less-than-carload lots being quoted 2.75c, base Pittsburgh.

Some Contracts Are Placed

Cleveland, Dec. 5.—Consumers in steel bars in this territory including nut and bolt, automobile parts and other manufacturing users, now are actively closing for first quarter requirements. In a number of cases the mills find they will be so obligated on tonnage carried over from the last quarter that they are not inclined to assume additional quantities for the latter period. On the contracts placed for first quarter in lots running up to 1000 to 2000 tons or so, 2.00c, Pittsburgh, has been the prevailing price. The market seems well established on that basis, its strength apparently being due to the sold-up condition of most of the leading mills which finds the capacity of some makers committed as far as three to four months ahead.

Demand Well Maintained

New York, Dec. 5.—Demand for steel bars is well maintained. Most of the current business involves dennite specifications. Few blanket contracts are being placed to cover first quarter requirements. Large buyers are making keen efforts to place steel bar tonnage at 1.90c base Pittsburgh, and in some cases where they lailed to develop 1.90c they have offered to place the business at 1.95c. The bar market is being held firmly and it is difficult to shade 2.00c base Pittsburgh. Iron bars, on the other hand, occasionally are going in carload lots at 1.95c.

Cold-Drawn Demand Slackens

Pittsburgh, Dec. 5.—A little slowing down, noted in the cold-drawn steel bar industry, conforms to the seasonal trend of business. The automotive industry is the dominant factor, and various automobile companies are ordering more consistently for this period than in previous years. Large interests such as General Motors Corp. have made arrangements for all or most of their first quarter requirements. A tendency is noted among some cold-drawn bar producers to steer clear of contracts, confining bookings to actual specifications. One placed this past week involved 1800 tons to be shipped during December and January. Most orders run from a carload to 200 tons at a time. Shipments continue heavy although somewhat hampered through a shortage of labor, steel and transportation facilities. Despite these difficulties one or two companies had the best shipping month in November of their histories. Operations run from 80 to 100 per cent and several producers plan to continue at that rate until the latter part of December when plants will be shut down for inventories. The market price still continues unchanged at 2.50c, base Pittsburgh, although at times higher prices are asked. Makers feel that at least $15 per ton should be the spread for conversion whereas with hot bars at 1.90c or 2.00c, the spread is only $12 and $10 per ton, respectively.

Booking First Quarter Bolts, Nuts, Rivets

NUT AND BOLT PRICES, PAGE 1590

Chicago, Dec. 5.—Consumers of bolts and nuts are seeking to place contracts for first quarter requirements with producers and the latter are willing to book the business at the prevailing schedule of discounts. Whether this level can be maintained remains to be seen, but it seems likely that business for first quarter of next year will be on approximately the present price basis. Specifications on contracts are coming out and operations are at a fair rate.

Dull Period Is On

Pittsburgh, Dec. 5.—First quarter inquiries for nuts, bolts and rivets are more numerous and several fair tonnages have been closed. In the spot market the usual end-of-the-year dull period prevails. Makers are looking ahead to Jan. 15 with expectations that by that time more sizable business will develop. Quoted prices remain unchanged as applicable to first quarter tonnages although of late some slight weakness has developed in connection with rivets. Two or three manufacturers report inability to obtain business at 3.15c and 3.25c, base Pittsburgh, on structural and boiler rivets, respectively, and are quoting 3.00c and 3.10c for first quarter. On some fairly large tonnage business one or two makers have shaded the 3.00c base but this is not general.

Rivet Prices Decline

Cleveland, Dec. 5.—Bolt and nut makers in this district now are accepting business for first quarter. As had been expected, prices quoted on all new business are the same as those which existed during the present quarter. There appears to be considerable automobile business coming out, with the railroads and other industries placing a fair volume of orders. In some quarters a slight slump in demand until after the inventory season is looked for.

A decline of $3 per ton in rivet prices on all first quarter business is noted. The leading maker here who had been quoting 3.15c and 3.25c, Pittsburgh, on structural and boiler rivets respectively, is accepting business for first quarter at 3.00c and 3.10c, respectively. The drop is said to be due to an easing in demand.

Gets Temporary Receiver

David Halstead, Philadelphia, has been appointed temporary receiver for the American Manganese Mfg. Co., Philadelphia, upon petition of the company's bondholders. No date has been set for a formal hearing as to the

company's affairs but it is expected they will be held this month. The company, it is stated, is solvent but lacks working capital.

Season's Ore Shipments 43,613,184 Tons

ORE PRICES, PAGE 1590

Cleveland, Dec. 5.—Ore shipments from the Lake Superior district have been completed for the season, the total movement by water this year amounting to 42,613,184 tons, which with estimated all-rail movement of 1,000,000 tons gives a total of 43,613,184. This compares with a total of 22,798,349 in 1921. The movement this year would have been several million tons larger, shippers say had coal and rail strikes not interfered with production in the iron and steel industry.

Week's Pig Iron Imports Total 18,943 Tons

Philadelphia, Dec. 5.—Imports at the port of Philadelphia in the week ending Dec. 2 included 2500 tons of chrome ore from South Africa; 7692 tons of iron ore from Sweden; 13,857 tons of pig iron from England; 1900 tons of pig iron from France, 2436 tons from Belgium and 750 from Scotland. The total of pig iron, therefore, was 18,943 tons.

Arrivals of foreign pig iron at Boston the past week total 2750 tons.

Iron Ore Tax Case To Be Heard This Week

Washington, Dec. 5.—Final argument in the appeal by the Minnesota iron ore shippers in the case involving the occupational tax, levying a tax of 6 per cent upon the value of all ore mined, is to be heard by the Supreme Court Wednesday or Thursday. The tax was upheld by the Minnesota supreme court and the appeal was made by practically all Minnesota iron mining companies.

Counsel for the ore producers will urge the court to declare the tax unconstitutional on two basic grounds. One is that it imposes a burden on interstate commerce, because practically all ore mined is shipped in interstate commerce under contracts made prior to the imposition of the tax. The second is that the tax is void because unequal in operation. Argument for the ore producers is to be made by C. A. Severance, of the United States Steel Corp.

Hoop Demand Still Large

HOOP PRICES, PAGE 1530

Pittsburgh, Dec. 5.—Small orders for hoops and bands continue to be filed for shipment as soon as possible during the first quarter. The aggregate, however, is large although generally single orders call for a carload or two at a time. Some automotive interests have closed on bands for the first quarter and specifications for January, and in one or two cases February, already are in hand. Hoops and bands remain quotably unchanged at 2.90c, base Pittsburgh.

Plate Activity Restricted

Demand in Middle West for Car Building and Tanks Flooding Chicago Mills—Easier Prices Prevailing

PLATE PRICES, PAGE 1530

New York Dec. 5.—Miscellaneous demand for plates is fair, but the volume continues insufficient to enable eastern plants to operate at above 50 per cent of capacity on the average. The biggest tonnage involved here includes several thousand tons for tanks to be placed by the Mexican Petroleum Co. The largest direct inquiry for plates is for 800 tons from a New Jersey boiler maker who is bidding on a steel pipe line for Honolulu. Alternate bids are to be taken Dec. 15 by the borough of Brooklyn on 4 miles of a pipe line of 66 and 72-inch riveted as lock bar pipe, to require about 3000 tons of steel. Several moderate sized tonnages have been placed lately for ship work. Current prices range from 1.90c to 2.00c base Pittsburgh. Buyers in some cases intimate they are able to do 1.85c base Pittsburgh but as far as known this price has not been named since a round tonnage was placed at the figure a few weeks ago.

The Pennsylvania railroad shortly will ask bids on four car floats which will require considerable tonnage.

Prices Show Easiness

Cleveland, Dec. 5.—Easier prices continue to be reported from various quarters of the plate market and it is doubtful whether an attractive order for tank steel would command more than 1.90c, Pittsburgh. This price seems now to represent the going market on sizable tonnages. Where the order is especially attractive even lower than 1.90c has been quoted although such cases are exceptional. Boiler plates and other special qualities as well as small lot orders of tank steel continue to be placed at 2.00c, Pittsburgh. Some tonnage for first quarter is being contracted for in connection with plates, shapes and bars, particularly by fabricating shops. A Sharon, Pa., fabricator is negotiating for 1000 tons covering a contract for 78 oil stills, the order for which has just been taken. Fabricators in this territory are interested in the pipe line for Brooklyn requiring 3000 tons, bids on which are to be taken shortly. No award yet has been made for the 3000 tons of steel required for the additional boat recently taken by the Toledo Shipbuilding Co. It is now learned that this boat is for the Huron Transportation Co. and is to engage in the cement carrying trade.

Plate Demand Fills Mills

Chicago, Dec. 5.—In addition to heavy demand for steel plates for railroad car building, the oil industry requires so large a tonnage for tanks that it is a question where these two important interests are to obtain their supplies. With contracts already on mill books covering requirements of car builders and tank builders, with business now pending and with other business which is known to be coming out shortly, plate mills are in a fair way to be overloaded for several months. Orders for oil storage tanks which will require 15,000 to 16,000 tons of plates now are expected to be placed during the present week. Others are being figured quietly. The Sinclair Oil Co. recently placed a number of stills with the Petroleum Iron Works and the Bethlehem Steel Co., 1500 to 2000 tons of plates being required. It has developed that the Standard Oil Co. of Indiana finally awarded 20 tanks to the Grover Corp., instead of to the American Bridge Co. as announced last week. The other 20 tanks as then stated will be furnished by the Chicago Bridge & Iron Works. Plates are quoted by the Illinois Steel Co. at 2.10c, Chicago mill, and by the Inland Steel Co. at 2.30c, Chicago.

Majority of Orders Small

Pittsburgh, Dec. 5.—Occasionally a large tonnage of plates is closed but the majority of orders continue to involve small lots of 50 to 200 tons each. A fairly large number of small tanks are up for consideration with here and there a larger requirement for oil storage tanks. Most of these are coming from a large oil field near the El Dorado, Kan., territory and others from other sections of Arkansas, for one, two, three or five tanks at a time, 50,000 barrels being the usual capacity. Plates for ship and barge building are ordered from time to time in lots of around 1000 tons and specifications against existing contracts are received more or less regularly. Plates are usually quoted at 2.00c, base Pittsburgh, although at times weakness develops and 1.90c and 1.95c are quoted. With some producers, the minimum is 2.00c, base.

Shipbuilding Tonnage Heavier

Philadelphia, Dec. 5.—Some shipbuilding work has come to the front with Atlantic coast yards. The Sun Shipbuilding Co. has booked three barges for the Tidewater Oil Co. and two barges for the Standard Transportation Co. Pusey & Jones have taken two ferry boats for the Reading railroad. The latter road expects to place four car floats some time after Dec. 20. Plate business is somewhat better although it is insufficient to support operations of eastern mills more than 40 to 50 per cent of capacity. Included in the new business is some locomotive tonnage and additional oil field requirements but more of it is of a miscellaneous character. The market openly is quoted at 2.00c, Pittsburgh, but 1.90c applies on attractive lots.

To Start Tube Mill

A meeting of the stockholders of the International Steel Tube Co., Cleveland, has been called at the Hollenden hotel in that city Dec. 15, for purposes of reorganization. It is expected that this action will precede the placing in operation of the tube works of the company at Cleveland. This plant recently has been completed and now is ready for operation. Steel tubes will be produced.

Mark Scrap Prices Lower

Dealers Asking More Than Consumers Offer but Lists Generally Are Reduced 50 Cents to $1—Pittsburgh Active in East

SCRAP PRICES, PAGE 1594

Chicago, Dec. 5.—With heavy offerings by railroads, the market for scrap has declined further and although quotations at which the Illinois Central tonnage was sold last week were above the present market, they were considerably lower than figures submitted on previous railroad lists. Some specialties which have been in demand brought prices considerably above the market, as dealers with short sales at higher prices could afford to pay more than they could sell for at present. On the other hand, some items went at considerably less than prices which prevailed recently. Consumers are not buying and the market is quiet and yields slightly in price practically every week. Railroad offerings continue to come out, although those issued a week or 10 days ago carried a heavier total than the late offerings. The Belt railway, Chicago, offers 1000 tons and the Louisville & Nashville 5000 tons.

Still Moves to Pittsburgh

Boston, Dec. 5.—Heavy melting steel continues to move out of New England to Pittsburgh and several thousand tons have been sold in the past week or 10 days. Embargoes, however, are now interfering with shipments. Other grades of scrap are dull with prices soft, although nominally unchanged in most cases.

Strength in Market Shown

Philadelphia, Dec. 5.—A stronger tone is noticed in the scrap market here due to Pittsburgh buyers having difficulty in obtaining heavy melting steel in this district at $16.50 delivered. Eastern Pennsylvania dealers want a higher price. As a rule the scrap demand generally is dull. Dealers say scrap consumption indicates eastern steel mills are not operating on an average of more than 50 per cent of their capacity.

Pittsburgh Buys in East

New York, Dec. 5.—While demand for scrap in the East is light, a good inquiry continues to come out from the Pittsburgh district, especially for No. 1 railroad steel and borings and turnings. Dealers in some cases are offering as high as $14.75, f.o.b. New York, for Pittsburgh deliveries, although the dealers' market generally is nearer $14 to $14.50. Even this range is higher than it was a week or so ago.

Car shortage, however, hinders shipments considerably. The Pennsylvania railroad now has a new system of embargo in effect. Instead of the permit system, it has adopted a plan of accepting shipments of iron and steel on three specified days out of every 10. This change was made to forestall charges of unfairness in issuing permits.

While there have been some further reductions, the market is steadier than it has been in several weeks. Cast scrap has showed exceptional firmness, notwithstanding a lack of sizable orders. Turnings are off 50 cents, holding at $11.25 to $11.75 f.o.b. New York, but the close proximity of borings and turnings to heavy melting steel is unusual, the relative strength of the former being attributed indirectly to the shortage of coal. Wrought material has again slumped off, No. 1 railroad wrought being down 50 cents to a range of $15.50 to $16, New York, and wrought pipe, $10 to $10.25.

Various Quotations Are Lowered

Pittsburgh, Dec. 5.—Approximations of present scrap market values rather than figures based on actual transactions are responsible for the numerous reductions registered in quoted figures this week on various grades. These are from 50 cents to $1 per ton lower than last week although sales have been few and far between. Since dealers will not pay over $20.50 for heavy melting steel, that marks the maximum of the quotable market on that grade. The cast grades also are weak, reflecting the downward tendency of pig iron. Most dealers have covered their short orders and notice the beginning of the usual seasonal slump.

(Concluded on Page 1549)

Semifinished Is Irregular

Round Tonnages of Sheet Bars, Billets and Slabs Booked at $37.50, Youngstown—Wire Rods for First Quarter Closed at $45

SEMIFINISHED STEEL PRICES, PAGE 1530

Pittsburgh, Dec. 5.—Interest in semifinished materials is still low. Buyers are awaiting an announcement by the Carnegie Steel Co. as to its first quarter prices on sheet bars, billets and slabs. The current market is quoted at $37.50 to $38, Pittsburgh or Youngstown, both figures applying in recent negotiations. Buyers evidently expect lower figures and have not covered on their first quarter needs. Customers of the Carnegie Steel Co. expect to be carried ahead and protected as they were during the fourth quarter and no formal price announcement may be made, since it is understood that practically all of its output already is obligated. Wire rods continue quoted at $47.50 to $50 though on round tonnages $45 was done the past week. Most mills are filled up for the first quarter. The American Steel & Wire Co.'s figure remains unchanged at $45. Skelp is quoted around 2.00c and since small tonnage has been taken on that basis large lots possibly would develop a lower figure. Few inquiries are cut Some skelp recently was sold for shipment abroad.

Press for Wire Rods

New York, Dec. 5.—Considerable pressure continues to be exerted for wire rods owing to the extent to which most makers are behind in their deliveries. Wire rod business is going at $45 to $47.50, base Pittsburgh. Billet business is confined to occasional small tonnages which are bringing $40, base Pittsburgh, for open-hearth rerollers and $45, base Pittsburgh, for forging billets.

Lower Prices Are Named

Cleveland, Dec. 5.—Semifinished steel prices continue to show some irregularity. Sheet bars, billets and slabs now are down to $37.50, Youngstown, a leading Northern Ohio producer having sold round tonnages in the week at this figure for delivery over the remainder of the year. Little selling for first quarter delivery yet has been done by this producer and inquiries for that position are not numerous. A large Cleveland consumer has closed for 5000 tons of wire rods for first quarter shipment and this business is reported to have gone to an independent maker at $45, Pittsburgh. Independent makers as a rule have been quoting rods at $47.50 to $50, Pittsburgh, while the leading producer with little tonnage to offer in the open market has been continuing at $45.

$37.50 Quoted for First Quarted

Youngstown, O., Dec. 5.—While producers of sheet bars here have not made known their intentions regarding first quarter prices it is intimated that tonnage will be booked at $37.50 to $38, Youngstown. Some 1923 sheet bar business involving insignificant tonnage has been placed at $38, here, although on a 1000-ton inquiry put out this week a price of $37.50, Youngstown, was submitted. Sales of billets and slabs are lacking.

Jobbers Report Demand as Fair; Prices Hold

WAREHOUSE PRICES, PAGE 1586

Philadelphia, Dec. 5.—Due to the Thanksgiving holiday the volume of orders for iron and steel products from warehouse was not as heavy as in the preceding week. However, the volume of business is estimated at 60 per cent of normal and has been satisfactory to jobbers. A drop in demand from now on is anticipated. Prices are firm at the established levels.

Sheet Prices Are Soft

New York, Dec. 5.—Softness in black and galvanized sheets is a feature in the local warehouse market. The larger jobbers still are quoting 4.90c and 5.90c, respectively, but shading is noted in some quarters. Firmness, however, characterizes the remainder of the list, with trading well maintained. Demand for shapes and reinforcing bars is outstanding.

Demand Continues Strong

Cleveland, Dec. 5.—Jobbers in iron and steel products in this district continue to report demand heavy. One interest states

it is unable to fill orders due to rapidly depleting stocks. Prices are strong. The steady character of demand is thought to be due to the excellent weather which has prevailed. A drop is expected when winter weather is experienced.

Tin Plate

Is in Heavy Demand for Food Containers—Operations Are High

TIN PLATE PRICES, PAGE 1530

Pittsburgh, Dec. 5.—Tin plate for cans, food containers, etc., is in good demand and specifications have been particularly heavy. Some of the larger can companies with annual requirements of several million base boxes, already have filed specifications for January and February needs. Smaller consumers too, are furnishing specifications from week to week for spot and future shipment. Independents are intimating that $4.85 shortly must be their minimum as against the regular market price of $4.75 per base box of 100 pounds, Pittsburgh, as announced recently by the American Sheet & Tin Plate Co. Not much oil business now is current, the last order placed by the Standard Oil Co., having gone abroad. Operations continue at a fairly high rate, the American company averaging 73 per cent with an increase expected shortly, and independents about 85 or 90 per cent.

Make Executive Changes in Belmont Iron Works

Changes have been made in the personnel of the executive staff of the Belmont Iron Works, Philadelphia and Eddystone, Pa., according to an announcement just made. A. F. Rander, second vice president and superintendent of the company, has been made first vice president. Joseph G. Shryock, designing engineer, has been promoted to chief engineer. J. Howard Rowbotham has been appointed assistant treasurer.

Mr. Rander has been connected with the Belmont company for more than 20 years. Mr. Shryock started with the Pencoyd plant of the American Bridge Co. in 1900. Three years later he took a position in the engineering department of the Virginia Bridge & Iron Works at Roanoke and a year later returned to Philadelphia, joining the staff of the Belmont company. In 1906 he was made designing engineer.

Rates Not Prejudicial to Buffalo, Examiner Says

Washington, Dec. 5.—The tentative report of an examiner for the interstate commerce commission finds that the coal and coke freight rates from Pittsburgh, Reynoldsville and Connellsville districts to Buffalo are not unreasonable or prejudicial, in comparison with rates on iron ore from the lake front to interior furnaces. Provided the commission accepts this recommendation, Buffalo blast furnaces have lost their complaint in asking not only for an adjustment in coal and coke rates but also for the establishment of minimum rates on ore to interior furnaces.

New Sheet Buying Limited

Some Consumers Endeavoring To Increase Bookings To Obtain Protection for Second Quarter—Automotive Industry Covers for Large Tonnages

SHEET PRICES, PAGE 1530

Pittsburgh, Dec. 5.—Sheet order books of the American Sheet & Tin Plate Co., are crowded with business for the entire first quarter, and its customers now are concerned about second-quarter tonnages. They are endeavoring to add to their present bookings so that they will be carried ahead and protected for all or a part of the second quarter period. Except for this, new demand has slackened somewhat. Specifications are heavy for all grades, particularly for galvanized and full-finished automobile sheets. While on the latter independents still are quoting and receiving 5.00c, base Pittsburgh, the American company's figure is 4.70c, base Pittsburgh. Some large automotive interests have bought large tonnages, covering for their entire first quarter requirements. This includes several units of the General Motors Co. Blue annealed prices are not so strong as they were a few weeks ago among independent producers, more of whom now are meeting the Steel corporation's figure of 2.50c, base Pittsburgh. Two or three independent producers are quoting below the American company's level of 3.35c on black sheets by $1 to $2 per ton. The minimum of 3.25c is obtainable from a company which recently commenced operations. Other instances of shading under the 3.35c figure are noted on the part of those companies which sidestepped black sheet business when sheet bars were selling at $40, they, too, are endeavoring to fill up their order books with low priced tonnage. Galvanized sheets are firm at 4.35c on account of high spelter costs. Good business is reported from practically all consuming centers, there being no letup in demand for building purposes. Specialties are moving in sizable volume. Sheet mill operations generally in the Mahoning valley and Pittsburgh territories are increasing. Independents here are on about an 85 per cent basis. The American Sheet & Tin Plate Co. is operating slightly over 80 per cent. Despite transportation difficulties, shipments continue at a high rate although a severe car shortage still is felt and large tonnages of sheets are piled up at various mills on account of embargoes, etc.

Business Fair at Buffalo

Buffalo, Dec. 5.—Sheet business is fair. The general level of prices is 3.35c, Pittsburgh for black, and 4.35c for galvanized, No. 28 gage.

Chicago Makers Sold Up

Chicago, Dec. 5.—Steel sheets to be produced by Chicago mills during first quarter of 1923 are practically covered by orders now on mill books. Consumers who are not represented in this tonnage will have to obtain their sheets elsewhere, as practically nothing remains for sale by Chicago producers. Inland Steel Co. has divided its probable production among its regular customers, all of whom took the tonnage allotted. This producer has allowed a narrow margin, which may become available late in the quarter. Prices continue at the level which has prevailed for several weeks, 2.50c, 3.35c and 4.35c, Pittsburgh, for blue annealed, black and galvanized, respectively.

Valley Market Dull

Youngstown, O., Dec. 5.—Dullness is noted in the sheet market in this district, and lacking specifications some makers have been compelled to reduce operating schedules. Not much demand exists for any grade of common sheets for prompt shipment, although a few consumers are beginning to line up first quarter tonnages. The market here is quotable at 2.50c to 2.60c for blue annealed, 3.35c for black and 4.35c for galvanized. Considerable shopping around is done by buyers in placing orders for certain grades. Some producers are refusing to consider galvanized business at 4.35c, in view of high spelter costs. Others will not take blue annealed business at 2.50c, unless the specifications involve extra working such as for a pickled, limed or oiled finish. Competition in black is keen, in view of the small volume of tonnage up for negotiation. Weak spots are reported, although as far as can be learned the market here is firm at 3.35c, Pittsburgh. Producers of automobile sheets have not opened books formally, although in a few instances tonnage for first quarter delivery has been placed. The price of fine finished sheets for 1923 delivery is indefinite at present because makers are unable to determine what price they will have to pay for sheet bars. However, 5.00c, Pittsburgh, for No. 22 has been set as a tentative figure. While the Ford Motor Co. has not made known its intentions, it is understood the company will engage in the manufacture of sheets. Plans under contemplation include the installation of 12 electric furnaces for the production of steel, two small blooming mills and 40 sheet mills. Estimates now are being made.

Strip Contracts Booked

STRIP PRICES, PAGE 1530

Pittsburgh, Dec. 5.—Additional strip steel contracts both hot and cold-rolled have been booked and specifications already have been furnished for a few of these. Spot demand, however, only is fair. Two or three units of the General Motors Corp. have closed on first quarter requirements which, with other buying by automotive interests, places that industry at the head of the list of strip buyers at present. Other consuming lines, however, are represented in a smaller way so that the buying is fairly well distributed. Orders usually involve from a carload up to several hundred tons at a time. Prices are unchanged at 2.90c and 4.50c for hot and cold-rolled, respectively.

The Jay Jay Bearing Co., Bridgeport, Conn., operated by J. J. Werner, is a petitioner in bankruptcy, having debts of $11,533.60 and assets of $10,252.08. The first meeting of the creditors was to be held.

Shape Needs Are Large

Highway Bridges Call for 10,000 Tons—Delaware Span Takes 9400 Tons—Smaller Projects Active with Prospective Work Large

STRUCTURAL SHAPE PRICES, PAGE 1530

New York, Dec. 5.—Shape prices are easier in some quarters, it now being possible to shade the market at least $1 a ton. This makes for a range of 1.95c to 2.00c, Pittsburgh, on tonnage for delivery within a reasonable time. Where immediate delivery is desired, a premium of five points still has to be paid. Fabricated prices also continue to show a slightly softer tendency. The market, however, is showing surprising strength for this season, due in a large measure to the amount of building which continues to come out.

A leading current award calls for 9400 tons for towers for the Philadelphia-Camden bridge, the business going to the Bethlehem Steel Bridge Corp. at a bid of around $1,387,000. New inquiry calls for 1400 tons of bridge work for the Baltimore & Ohio railroad. A feature of new demand is school work. At the moment there are no school projects being figured in New York city, but within a radius of 50 miles there are at least 15 schools up for figures, averaging around 300 tons each. Specifications will be brought out shortly for the new George Washington high school, New York, involving 3500 tons. Fabricators are showing considerable interest in plans of the shipping board to erect new double-decked piers in Hoboken for the accommodation of the LEVIATHAN but as yet specifications have not been issued. The project will involve several thousand tons.

Demand Is Sustained

Philadelphia, Dec. 5.—Open weather is responsible for the sustained demand for structural shapes. Building work demand continues sufficient to support the steel mills around 70 per cent of capacity. Most of the current business is at 2.00c Pittsburgh. Actual tests in the past week showed 2.00c cannot be broken except on lots of 1500 to 2000 tons or larger. The minimum on most attractive business is 1.90c, Pittsburgh.

Shape Tonnage Keeps Up

Chicago, Dec. 5.—In spite of winter weather approaching, building construction has shown little tendency to fall off in the West and structural lettings continue in surprising total. The largest tonnage placed in the West recently involves 1200 tons for a hotel building at Los Angeles. Other lettings were for small totals. Plain material is quoted by Inland Steel Co. at 2.20c, Chicago mill, and by the Illinois Steel Co. at 2.10c, Chicago mill. Both of these interests have little to offer for delivery before March.

Large Work Held Up

Pittsburgh, Dec. 5.—Structural shape mills report specifications are fairly numerous for small jobs but that larger work is being held up for the time being. Formal contracts have not been awarded for the 6000 tons required for the Fortieth street bridge, Pittsburgh, on which the McClintic-Marshall Co. is low bidder. Another large job pending is the new plant at Ashland, Ky., of the American Rolling Mill Co., Middletown, O. Between 4000 and 4500 tons of shapes are involved. Estimating departments are busy on small jobs and prices are unchanged at around 2.00c, base Pittsburgh, with some contracts being filled at 1.90c. A large number of inquiries for transmission towers are current. The American Bridge Co. was successful in receiving an award of about 1000 tons for transmission towers in the Worcester, Mass., district.

Inquiry Shows Improvement

Boston, Dec. 5.—Buying of structural shapes direct from mills still is light but encouragement is found in a renewed inquiry and a general awakening of interest on the part of large consumers. For sometime small work has been covered from fabricators' stocks but apparently confidence in advancing prices is gaining and considerable buying is expected before the first of the year. Transactions have been at 2.00c, Pittsburgh.

Week's Business Quiet

Cleveland, Dec. 5.—Survey of structural steel contracts placed in this territory this year, but involving only tonnages on which one fabricator submitted figures, shows a total of 30,000 tons as against approximately 15,000 tons in 1921. The same suryey shows the bulk of the business this year has been in smaller but more numerous tonnages. Curiously, the fabricator making the survey booked a smaller percentage of the business placed this year than he did last. The past week has been comparatively quiet, the only interest apparently being in projects for which contracts are pending. These include several school buildings. A local contractor placed 800 tons for pier sheds in Los Angeles. An inquiry is pending from a local fabricator for 3000 tons for car repairs. Prices continue around 2.00c, Pittsburgh.

CONTRACTS PLACED

Awards reported this week ..... 18,049 tons
Awards reported last week ..... 9,283 tons
Awards reported two weeks ago.. 10,912 tons

9400 tons, towers for Philadelphia-Camden bridge, Philadelphia, to Bethlehem Steel Bridge Corp.
1200 tons, Rosslyn hotel annex, Los Angeles, to Llewellyn Iron Works.
1100 tons, warehouse for Revillon Freres in West Thirtieth street, New York, to Hay Foundry & Iron Works.
1000 tons, transmission towers for the Worcester, Mass., district, to the American Bridge Co.
800 tons for two pier sheds, Los Angeles, Cal., awarded an independent fabricator by Austin Co., general contractor.
750 tons, apartment, Seventh avenue and Fifty-fourth street, New York, to A. E. Norton, Inc.
500 tons, Y. M. C. A., Jersey City, N. J., to Fagan Iron Works.
500 tons, Hilltown bridge over Salinas river, Cal., to Judson Mfg. Co. and not to American Bridge Co. as previously reported.
400 tons, department store extension for Hugo C. Prange Co., Sheboygan, Wis., to Worden-Allen Co.
370 tons, Pantages theater, San Diego, Cal., to Dyer Bros. Structural Co.
350 tons, French apartment, 55 Park avenue, New York, to McClintic-Marshall Co.
339 tons, for buildings at Richmond, Va., for the Richmond Fredericksburg & Potomac railroad, to McClintic-Marshall Co.
250 tons, for 11 buildings for Pennsylvania highway department, to Belmont Iron Works.
200 tons, building for Stanley theater syndicate, Philadelphia, to Belmont Iron Works.
200 tons, building for Trailmobile Co., Cincinnati, to Blaw-Knox Co.; Austin Co. general contractor.
200 tons, Castle & Cook building, Honolulu, previously reported awarded to Honolulu Iron Works, awarded to California Steel Co.
196 tons for the Nash Motors Co., Kenosha, Wis., grandstand, to Worden-Allen Co.
190 tons, car repair shop for Lake Superior & Ishpeming railroad, Marquette, Mich., to Wisconsin Bridge & Iron Co.
176 tons for addition to ice plant, Bakersfield, Calif., to Santa Fe railroad, to Joseph T. Ryerson & Sons.
128 tons, for plates for Malike siphon, Wailos ditch, Maui, Hawaiian islands, to unidentified fabricator.

CONTRACTS PENDING

4500 tons, building at Ashland, Ky., for American Rolling Mill Co., Middletown, O.; bids being taken.
3500 tons, George Washington high school, New York, specifications soon.
3400 tons for highway bridge across Missouri river at Lexington, Mo., American Bridge Co. low bidder.
3000 to 4000 tons for highway bridge across Missouri river at Yankton, S. D., bids to be taken Dec. 11.
3000 to 4000 tons for highway bridge across Missouri river at Glasgow, Mo., bids being taken.
3000 tons, Roosevelt road viaduct portion of union station, Chicago, bids entered.
2500 tons for West Side Y. M. C. A. addition, New York, instead of 1200 tons as reported, pending.
2500 tons, building for Continental National Bank and Bank of Republic, Salt Lake City, bids being taken.
1400 tons, bridge work for Baltimore & Ohio railroad, pending.
1000 tons, Carpenter apartment, Ninety-eighth and Fifth avenue, New York, postponed.
800 tons two high schools each involving 400 tons Yonkers N. Y. bids asked.
750 tons, bridges for Baltimore & Ohio railroad, bids asked.
500 tons bridge work for New York Central railroad, pending.
400 tons, Carpenter apartment, Ninety-fifth street and Fifth avenue, New York, bids asked; another Carpenter apartment, involving 1300 tons and reported last week as pending, will not be up for figures for about three weeks; it will be located at Ninety-sixth street and Fifth avenue, New York.
400 tons, junior high school, Baltimore, bids asked.
400 tons, high school, Freeport, L. I., bids asked.
250 tons, building for Independent Fruit Auction Co., New York, pending.
200 tons, platform extension for Municipal railways at Canal street, New York, pending.
100 tons, apartment house, Powell street near Pine, San Francisco, bids being taken.

Wire Makers

Are Far Behind in Deliveries—New Buying Slightly Less

WIRE PRICES, PAGE 1530

Pittsburgh, Dec. 5.—Considerable business in smooth wire from manufacturers is noted by wire products makers and deliveries are from five to six weeks deferred. While some mixed carload business, wire, nails, and fencing, from jobbers is noted from time to time, the big buying movement against spring needs of farmers holds off, despite spring terms available. Only in one or two cases is such buying encountered, one valley producer reporting a brisk demand by its agricultural trade. A slight let up in nail business, which for several weeks past has been so heavy, now is reported but all makers have a splendid backlog on which their nail departments are operating nearly to capacity. Wire and nails still are quoted at 2.45c

and 2.70c, base Pittsburgh, respectively, and the Cambria Steel Co., which has been maintaining prices $1 per ton in advance of those levels, has met the market in this locality.

Makers Behind Schedule

New York, Dec. 5.—Practically all of the wiremakers continue far behind on their schedules. Most of them are three to four months behind on deliveries. Inability to catch up with schedules is the result of the scarcity of labor. Prices are unchanged at 2.45c base Pittsburgh for nails and 2.70c for wire.

Inquiry Is Less

Chicago, Dec. 5.—Inquiry for wire and nail tonnages is slightly less than during recent weeks. However, there is no indication of lessened interest, as buyers with contracts on mill books are urging early shipment of material. Production was interrupted last week by the holiday and by mill inventory, which cut down shipments somewhat. Nails continue in most demand, and while it is not yet the season for barbed wire some business in this product is being booked for shipment early in the spring. The market appears to be steady on a single price by all producers, plain wire being 2.45c, Pittsburgh, and nails 2.70c, Pittsburgh.

Replogle Sells Furnaces

The Replogle Steel Co. has arranged to sell the blast furnaces at Topton and Macungie, Pa., which it acquired when it took over the Empire Steel & Iron Co., and it is expected that transfer will be accomplished by the end of the year. The Macungie furnace will become the property of the East Penn Foundry Co., the plant of which adjoins the furnace property. The Topton furnace has been sold to Howard Knauss and associates, of Emaus and Topton, Pa. It is planned to operate the furnace in the near future. Mr. Knauss formerly was blast furnace superintendent for the Empire Steel & Iron Co. at Catasauqua, Pa. No decision has been made by the East Penn Foundry Co. as to whether it will operate the Macungie furnace or dismantle it and use the property for the extension of its foundry. The furnaces were sold for $25,000 each. The Macungie furnace was built in 1874 and repaired in 1902. Its annual capacity is 25,000 tons. The Topton furnace was built in 1873, remodeled in 1888, rebuilt in 1892 and again repaired in 1902. It is rated at 40,000 tons per year.

Buys Steel Foundry

The plant of the Driscoll-Reese Steel Co., Hamburg, Pa., has been bought at receiver's sale by J. A. Gilmore and John G. Thomas, formerly of the Crucible Steel Casting Co., Lansdowne, Pa. Messrs. Gilmore and Thomas will operate the plant as the Pennsylvania Electric Steel Casting Co. The plant, built in 1917 and first operated in May, 1918, has a 1-ton electric furnace. It produced small steel and automobile castings and had a capacity of 900 tons annually.

Railroads Buy More Cars

Week's Awards Total 9200 Following 10,000 Placed Last Week—35,000 Still Pending—Pennsylvania Orders Only First Half Rails

RAILROAD TRACK MATERIAL PRICES, PAGE 1530

Chicago, Dec. 5.—Inquiry for railroad cars continues without diminution and forms one of the most important features of the iron and steel market. At present 35,000 cars are actively under negotiation. Within the past 10 days 15,000 cars have been awarded to builders, of which 11,700 will be built in the Chicago district. Car builders in Chicago find it difficult to obtain material from steel mills in sufficient volume to keep their plants operating at capacity and considerable time is lost waiting for supplies. It is believed some special preference must be made by mills to expedite completion and delivery of freight cars. Railroads seeking to place this business find it practically impossible to obtain deliveries before second quarter of next year. These conditions insure a steady flow of business from railroads and car builders to steel mills as a backbone for next year's business. Inquiry for rails and track fastenings is not of moment, although occasional small lots are being covered. Light rails are in practically no demand.

Ordering Rate Slows Up

Pittsburgh, Dec. 5.—Some letup in light rail business is reported by producers in this territory although large coal companies, like the Hillman Coal & Coke Co., continue to purchase as needed. Recent orders mostly comprise single carloads. Specifications on contracts, continue to be filed and shipments proceed at a high rate. From 2.00c to 2.15c is the quotable market on light rails, the former price being made in competition with rerollers, some of whom are reported to be going as low as 1.90c, base.

Demand for track accessories has moderated considerably with prices on spikes, tie plates, track bolts, etc., unchanged. Much small spike business from jobbers is presented, only to be refused by producers who have such a large backlog of orders direct from consumers.

Inquiries Fairly Heavy

New York, Dec. 5.—Freight car orders in November totaled 18,500, compared with 12,700 in October and 10,357 in September totaling 157,217 cars for the year to date. A leading car order calls for 3000 tank cars for the Union Tank Car Co., while outstanding inquiries include 5000 miscellaneous freight cars for the Southern Pacific, and 1000 for the Rock Island. Locomotive orders involve 49 for the Northern Pacific and 10 for the Central of New Jersey, both going to the American Locomotive Co., and 25 for the Chicago, Milwaukee & St. Paul, placed with the Baldwin Locomotive Works. This latter 25 makes a total of 75 to have been placed recently by the St. Paul.

The Long Island finally has contracted with the Bethlehem Steel Co. for 8000 tons of rails for 1923 delivery.

Pennsylvania Cuts Rail Order

Philadelphia, Dec. 5.—The Pennsylvania railroad is understood to have signed contracts only for its first half and not all of 1923 steel rail requirements as originally contemplated. The total tonnage is reduced from 170,000 tons to 100,000 tons. The company will wait until next year to place its second half requirements.

The Northern Pacific railroad has placed 49 locomotives with the American Locomotive Co. The St. Paul has placed 25 additional with the Baldwin Locomotive Works, making a total of 75 with 25 others in contemplation.

CAR ORDERS PLACED

St. Louis & Southwestern, 500 steel underframe box to Mt. Vernon Car Mfg. Co. and 500 automobile and 200 ballast to American Car & Foundry Co.

Northern Pacific, 1000 box to Western Steel Car Co., 1000 to American Car & Foundry Co. and 1000 to General American Car Co.

Pennsylvania, 100 cabin cars, to its own shops, Altoona, Pa.

Chicago, Milwaukee & St. Paul, 2000 gondolas, 1000 each to Pullman Co. and Pressed Steel Car Co.

Cranberry Creek Coal Co., 150 mine, to Pressed Steel Car Co.

CAR ORDERS PENDING

Chicago, Rock Island & Pacific, 5000 automobile and 250 each of refrigerator, freight and coal, bids asked.

Texas & Pacific, 1000 gondolas, 800 box cars and 200 automobile, bids asked.

Steamship Fuel Corp., New York, 100 hoppers and 200 box cars, bids asked.

Southern Pacific, 3700 box cars, 650 freight cars, 550 stock cars, and 100 cabooses, bids asked.

Canadian National, 1250 stock cars and 50 cabooses; also 143 miscellaneous coaches, bids asked.

Union Tank Car Co., New York, 3000 as follows: 1000 to Standard Steel Car Co.; 1000 to American Car & Foundry Co.; 500 to Cambria Steel Co.; and 500 to General American Tank Car Corp.

Missouri Portland Cement Co., 10 hoppers, to American Car & Foundry Co.

Philadelphia Rapid Transit, 100 passenger, to be bought soon.

Philadelphia & Reading, 45 steel suburban and five combination baggage, bids being taken.

Western Pacific, 800 gondolas and 500 stock, bids being taken.

Awards Shipping Dock

Pittsburgh, Dec. 5.—The Carnegie Steel Co. has awarded a contract for a shipping dock which will cost $500,000 to be built on the south side of the Monongahela river above the West Braddock bridge. It thus is preparing to engage in the shipping of finished steel by barge on the Ohio river on a more extensive scale than formerly has been possible. For this purpose additional barges and steam boats are being added from time to time to its already large fleet. The dock will be used by the Homestead, Edgar Thomson and Duquesne steel works.

Iron Stocks Are Less

Birmingham, Ala., Dec. 5.—Pig iron stocks in Alabama yards on Dec. 1 totaled 76,645 tons as compared with 102,945 tons on Nov. 1. On the yards now are 62,030 tons of foundry iron, 3909 tons of machine cast, 750 tons of warrant and 9956 tons of basic. The stocks on Nov. 1 included 82,328 tons of foundry, 9485 tons of machine cast, 1300 tons of warrant and 9833 tons of basic.

More Building Bars Out

Reinforcing Requirements Still Call for Large Tonnages Although Buying Is Slightly Lower—Sizable Lots Placed

REINFORCING BAR PRICES, PAGE 1530

Chicago, Dec. 5.—While new projects coming out for bids are not as numerous this week as last, plenty of business is in prospect in the structures now being figured and the winter promises to be busy. Engineering departments of bar selling companies are handling an unusual volume of estimating and some refuse to take on further inquiries.

In addition to the projects reported by sellers several thousand tons of bars have been booked in small lots and in cases where general bidding was not done, the business being placed privately. Two schools at Minneapolis have been awarded to the Kalman Steel Co. but the contracts have not yet been accepted.

Prices have firmed up from the levels that have prevailed, particularly since mill prices have been set for first quarter. The market now is firm at 2.50c, Chicago store, for bars. On a large lot of mill lengths, otherwise attractive, it might be possible to do 2.10c, Chicago mill.

1200-Ton Lot Placed

Pittsburgh, Dec. 5.—One of the largest orders for concrete bars noted in recent weeks has been awarded the Concrete Steel Co. It consists of 1200 tons for a power house for the Ohio Power Co., Philo, O., ordered by the Foundation Co., Pittsburgh. This interest recently awarded 600 tons for a power house at Saxton, Pa., 300 tons going to the Truscon Steel Co. and 300 tons divided among several other fabricators. A few other awards were made and several inquiries are pending, including one lot for a building for the Van Kleek Motor Co., Pittsburgh. Concrete bars are quoted at 1.90c to 2.00c although some fabricators are endeavoring to obtain 2.15c and 2.25c, base Pittsburgh.

School Work Pending

Cleveland, Dec. 5.—Aside from two or three school projects for which general contracts are about to be placed, little development is noted locally in the demand for concrete reinforcing bars. A local fabricator has booked 250 tons for an academy at Cincinnati. The market, which has been quoted at 1.95c to 2.00c, Pittsburgh, is a little softer.

CONTRACTS PLACED

Awards reported this week.....	5,465 tons
Awards reported last week.....	6,260 tons
Awards reported two weeks ago....	3,445 tons

1200 tons, power house for Ohio Power Co., Philo, O., to Concrete Steel Co.
800 tons, highway work in Illinois, to Kalman Steel Co.
750 tons, building for Rich Bros., Atlanta, Ga., to Concrete Steel Co.
600 tons, power house for Saxton Power Co., Saxton, Pa., 300 tons awarded Truscon Steel Co., Youngstown, O., and remainder distributed among two or three independent fabricators.
300 tons, building for Toby Rubovits, printer, Chicago, to Concrete Steel Co.
260 tons, plant additions for Harsh & Chapline Shoe Co., Milwaukee, to Corrugated Bar Co.
250 tons, Primalt Products Co., Chicago, to Corrugated Bar Co.
200 tons, Elks club house, Milwaukee, to Corrugated Bar Co.
200 tons, addition to Whitcomb hotel, San Francisco, to Badt-Falk Co.
190 tons, warehouse for Illinois Pacific Glass Co., San Francisco, to Badt-Falk Co.
175 tons, addition to Albany building, Oakland, Cal., to Edward L. Soule Co.
150 tons, garage for Chippewa Falls Auto Co., Chippewa Falls, Wis., to Kalman Steel Co.
100 tons, Harrison street viaduct, Chicago, to Kalman Steel Co.
100 tons, warehouse, Eighth and Natoma streets, San Francisco, to Badt-Falk Co.
100 tons, high school, Redwood City, Cal., to Badt-Falk Co.
100 tons, department store building for Coyle & Richardson Co., Charleston, W. Va., to the Concrete Steel Co.

CONTRACTS PENDING

1800 tons, factory building, Pacific Borax Co., Wilmington, Cal., bids being taken.
100 tons, building for Van Kleek Motor Co., Pittsburgh; bids being taken.

Alloy Sales

Include 1000 Tons of Ferro and 400 Tons of Spiegel—Prices Firm

FERROALLOY PRICES, PAGE 1530

New York, Dec. 5.—Sales of ferromanganese by New York houses during the past week involved 500 to 1000 tons, mainly for prompt shipment. There is nothing sustained about demand, owing to the fact that most consumers are fairly well supplied either with stocks or by contracts. English ferromanganese continues to be quoted both at $100, duty paid tidewater or $67.50 c.i.f. tidewater. Domestic ferromanganese continues to be quoted at $100 furnace.

Sales of spiegeleisen during the past week have involved about 400 tons, involving mainly carloads for prompt shipment. The market continues to range from $36 to $37 furnace on 20 per cent metal. There has been no test recently of the market on English spiegeleisen.

The Midvale Steel & Ordnance Co. is inquiring for 25,000 pounds of ferrotungsten and another inquiry for slightly more is pending. These inquiries represent most of the current activity as consumers generally are awaiting the year-end inventory before making commitments. Prices for ore and manufactured tungsten are unchanged, as follows: Chinese wolframite, $7.25 to $7.50 a short ton unit; ferrotungsten, 90 to 95 cents a pound contained, and tungsten powder, 95 cents to $1.

Ferrosilicon, 50 per cent, is scarce for this year's sale and delivery. Prices are firm at $82.50 to $85 delivered on prompt carlots. Some contracts for future delivery have been closed, but most of the important business still is pending.

Ferrochrome prices are unchanged. Few inquiries are reported. The 4 to 6 per cent carbon grade is quoted 13 to 14 cents by domestic producers and 12 to 12.50 cents by importers.

November was the best month in two years in point of vanadium shipments. Prices are firm at $3.50 to $4 a pound contained. Closing of the Standard Chemical Co.'s Colorado carnotite mines, due to a drop in radium price from $120,000 to $70,000 a gram, reflecting discovery of a rich radium deposit in Belgian Congo, has been viewed with interest in the vanadium market. Most of the current American production of vanadium excepting that of the leading producer, has been as a by-product of radium production from carnotite ores.

First Quarter Interest Awakens

Pittsburgh, Dec. 5.—Ferromanganese consumers and buyers of other alloys are more interested in first quarter requirements than in prompt supplies. Among the several inquiries out for first quarter and first half prices is that of the Union Steel Casting Co. From 200 to 500 tons usually is involved in such inquiries. Domestic ferromanganese, 80 per cent grade, continues to be quoted at $100, base.

One or two similar ferrosilicon inquiries are out. The Colonial Steel Co. purchased a single carload recently at $80, freight allowed, or slightly more. Two or three small lots have been closed at $90 to $100, but the carload spread is at $80 to $85, freight allowed. Prompt deliveries are difficult to obtain.

A Canton, O., consumer has been obtaining figures on its requirements of ferrochrome during the first half of 1923. A few sales of 4 to 6, or 6 to 8 per cent carbon material are noted, the former being quoted at 13 to 14 cents by domestic makers. One ton of maximum 2 per cent grade brought 28 cents although the market is understood to be 30 cents.

No inquiries for either prompt or future deliveries of spiegeleisen are noted. Only an occasional small sale is noted and the market remains quoted at $36 and $37, furnace, on 16 to 19 per cent and 19 to 21 per cent material, respectively.

Pipe Deliveries

On Old Orders Urged by Consumers —New Buying Holds Off

PIPE PRICES, PAGE 1530 AND 1590

Pittsburgh, Dec. 5.—Buyers of lapweld pipe are able to obtain deliveries within 30 or 40 days on most sizes but deliveries of buttweld sizes still are from eight to 12 or 14 weeks deferred. This is due to the uninterrupted demand for buttweld pipe, black and galvanized. New orders are somewhat fewer, giving producers an opportunity to make inroads on accumulated business. The Republic Iron & Steel Co. this week is operating its buttweld department 100 per cent and hopes to ship more of an aggregate than has been possible for some time. Many buyers are waiting deliveries of their orders before filing additional specifications. They are urging the speeding up of deliveries on old orders. Oil country demand is splendid, there being no visible letup in drilling operations. Heavy line pipe tonnages are not developing fast but numerous small lines of one

to 10 miles in length are noted each week.

Porto Rico Takes Tonnage

New York, Dec. 5.—Contract for 20,000 tons of 24 and 30-inch cast iron pipe for San Juan, Porto Rico, has been awarded to the United States Cast Iron Pipe & Foundry Co. A lot of 2800 tons of 6 and 20-inch cast iron pipe for Boston, recently reported pending, also has been placed with the same pipe manufacturer. Contractors' bids will be closed today on 200 tons for the water department of New York city.

Little Buying by Cities

Chicago, Dec. 5.—Except for the inquiry for 1500 tons of pipe for the city of Chicago on which bids have been opened, comparatively little municipal business is before sellers of cast iron pipe. Some small lots of industrial and railroad requirements are being booked and oil companies are also taking some pipe for use about their plants. Most makers find their position comfortable and have sufficient business on books to carry them well into the winter. Prices are unchanged.

Occasional Lettings Reported

Birmingham, Ala., Dec. 4.—Cast iron pipe makers are receiving some additional lettings now and are able to maintain steady operations. Of the occasional business being placed, the greater quantity of it is for immediate delivery. Illinois points in the last week or two placed upwards of 2500 tons in the South. Firm belief is again expressed that during the present month there will be several bids called for with specifications for delivery before or in early spring. Plans have been made for the addition to the plant of the National Cast Iron Pipe Co., Tarrant City, Ala. Stockholders of the company will meet Dec. 28 to pass on an increase of $500,000 in capitalization.

Ford Motor Plans Large Sheet Mill Plant

Plans for a steel plant on the River Rouge, Detroit, by the Ford Motor Co. which have been in view for some time in conjunction with the two blast furnaces now operating, are taking form. A point of important interest in connection with these plans because of the fact that the Ford company is a heavy buyer of this product, is that sheet production will be undertaken on a large scale, it is understood. A total of 40 sheet mills, it is stated, is in contemplation. The steelmaking equipment being considered consists of 12 electric furnaces, and the intermediate rolling capacity will include two small blooming mills.

The Morgan Construction Co., Worcester, Mass., has received the contract to build the first unit of the steelworks. The Worcester company also will be the engineer in the installation of several rolling mills. The heavy equipment, it is understood, will be built in the Pittsburgh district.

The Nonferrous Metals

Copper Firmer With Merger of Big Companies a Factor—Zinc Exports Heavy—Aluminum Strong

	Copper Electro delivered	Copper Lake delivered	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	'Spot† aluminum	Spot antimony	Nickel spot
Nov. 29.....	13.87½	14.00	36.00	7.30	7.05	22.00	6.40	32.00
Nov. 30.....	Holiday							
Dec. 1.....	13.87½	14.00	36.00	7.30	7.10	22.00	6.40	32.00
Dec. 4.....	13.87½	14.00	36.00	7.30	7.15	22.00	6.40	32.00
Dec. 5.....	14.00	14.00	36.12½	7.30	7.17½	22.00	6.40	32.00

†Outside market quotation.

NEW YORK, Dec. 5.—The outstanding development in the metal markets the past week is the reported purchase of the Guggenheim controlling interest in the Chile Copper Co. by the Anaconda Copper Mining Co. This development has had the effect of stiffening copper prices somewhat, as it marks the passing of the lowest cost producer to the strongest hands in the business. The markets generally have been firm to strong, excepting tin, which has been easy in tone, reflecting unfavorable Nov. 30 statistics, but this metal also became firmer today.

The volume of business has been rather light, as consumers in most lines are well covered for this month and are awaiting the approach of the new year for their future commitments.

Practically all the copper sellers returned to the 14c delivered, basis for electrolytic, the past week. Sales for domestic account for January delivery have been of fair aggregate size and a good hand-to-mouth foreign business has been done. The recovery in sterling exchange to above $4.53 has helped the export situation.

Foundry activities continue to grow, in view of the large amount of casting work required for railroad car journals, automobile and plumbing supplies purposes. Casting copper prices have held 13.40c to 13.50c, refinery.

Export business in zinc has been growing, following the lull of two weeks ago. Yesterday and today sales of 1500 tons for December-January shipment to Europe were made at prices equivalent to 7.30c East St. Louis. Domestic inquiry has been light, as consumers have been getting through shipments started when the traffic situation was tightest. High grade zinc has been selling at 8c to 8.25c delivered.

The lead market has been firm, but quiet, with outside sellers quoting 7c, East St. Louis, 7.25c to 7.35c, New York, against the Smelting company's prices of 6.90c, St. Louis, 7.10c, New York. Shipments to battery, cable and pigment makers continue heavy and all these trades are preparing for an active winter.

The world's visible supply of tin increased during November by 2435 tons, according to statistics published by the New York metal exchange in conjunction with the London metal exchange. Straits shipments, amounting to 6295 tons, were heavier than expected. American deliveries were 4812 tons, up to the average for the year. Prices for Straits tin have held at 36c to 36.25c.

A large business in ingot aluminum has been done for next year and inquiries for some 4000 tons still are in the market. Prices have advanced on foreign ingot, to 22c to 23c, New York for 98 to 99 per cent virgin ingot and 23c to 23.50c for 99 per cent. The domestic producer continues to quote 25c, delivered, for 99 per cent and 24c for 98 to 99 per cent. The domestic producer's base price for flat sheets is 36c, while the foreign price is 34c, duty paid, for importation.

Antimony has been easy, in a dull market, prices ranging from 6.40c to 6.50c, duty paid, for spot carlots.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled 24 oz., min	31.50
High brass	18.50
Zinc, ga. 9 to 18 (plates ½c less)	9.25 to 9.50
Lead, full sheets (cut, ¼c more)	10.25
Aluminum, base 18 ga. and up	36.40
SEAMLESS TUBES	
High brass	23.00
Copper	24.75
RODS	
High brass, round, ⅛ to 2½ inch	17.00
Naval brass rod	19.00 to 19.50
WIRE	
Copper	15.50 to 16.00
High brass	19.00

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
Cleveland	9.00 to 9.50
New York	8.50
Chicago	9.50
HEAVY YELLOW BRASS	
New York	6.25 to 6.50
Chicago	7.50
Cleveland	6.00 to 6.50
ZINC	
New York	4.00 to 4.25
Cleveland	4.00 to 4.50
HEAVY COPPER AND WIRE	
Cleveland	11.25 to 11.75
New York	11.00 to 11.50
Chicago	11.75
RED BRASS TURNINGS	
New York	7.75 to 8.25
Cleveland	8.00 to 8.50
Chicago	8.50
YELLOW BRASS TUBING	
Cleveland	6.00 to 6.50
NO. 1 BRASS ROD TURNINGS	
Cleveland	6.00 to 6.50
New York	6.75 to 7.00
Chicago	7.50
ALUMINUM BORINGS	
Cleveland	7.00 to 9.00

Aliens Offered for 8-Hour Day

Chairman of House Immigration Committee Declares Only Chance Steel Industry Has for Obtaining Larger Quotas Is To Abandon 12-Hour System—Employers To Be Represented at Hearings Now in Progress

WASHINGTON, Dec. 5.—Chairman Johnson, of the house immigration committee, said today the relation of the 12-hour day to the supply of common labor will be considered by his committee when it holds hearings on corrective amendments to the 3 per cent immigration act. He indicated there is some chance of enlargement of the quotas of countries supplying the steel mills their common labor, provided assurance can be given that the 12-hour day will be definitely abandoned. He intimated that this trade of the 8-hour day for increased Slav quotas presents the only chance for the steel interests obtaining a larger supply of immigrant labor, and such a trade still is in the "chance" stage.

Today the house immigration committee took testimony on the question of admitting refugees from the Turkish area of Europe and Asia Minor. Witnesses were to be asked whether the flood of Greeks, Armenians and Syrians for whom refuge is asked in the United States can be absorbed by the steel and other industries. The hearing today was to relate only to the refugee situation. In a short time, the date has not yet been fixed, hearings will be held on proposed corrective amendments to the 3 per cent act.

When the committee ties up the 12-hour day with the steel industry's desire for increased quotas it is probable that John A. Topping, chairman of the Republic Iron & Steel Co, New York; Eugene G. Grace, president of the Bethlehem Steel Corp., Bethlehem, Pa., and John A. Penton, publisher of IRON TRADE REVIEW, Cleveland, will be among witnesses summoned.

Secretary of Labor Davis is certain to be called because of his recent statements that there is no labor scarcity in the United States at this time.

Secretary Davis also recently denounced the 12-hour day in the mines of Montana, New Mexico, Nevada and Arizona and stated that when the quotas of such northern European nations as England, Holland, Germany, Sweden and Norway have been admitted it will be time enough to discuss enlarged quotas. Secretary Davis also has proposed physical and mental tests before the embarkation of aliens from their homeland. Recently Secretary Hoover stated that it will be difficult to recruit the ranks of mine workers if immigration restrictions are continued.

From what Mr. Johnson states, the only chance the steel industry has of obtaining the admission of more men from the Slav countries of Europe is to agree to eliminate the 12-hour day, and whether congress would consent to such a proposal is yet to be determined. In any event, amendment of the 3 per cent act prior to March 4 is next to impossible from the standpoint of time.

Late this week the October immigration statement will be issued by the department of labor and it will probably show an increase in immigration and a decrease in emigration from September, when arrivals numbered 49,881 and departures 7527, making the net gain for the month 42,354. October arrivals at New York topped those of September by some 4400. Boston reported a gain for October, and Philadelphia a loss.

It was stated at the White House today that immigration was discussed at the cabinet meeting. The President recognizes this as a really pressing matter, and concedes that undoubtedly there is a grave labor shortage in the country. A part of the cabinet discussion revolved around the failure of certain European countries to meet their quotas, while Italy, for example, already has exceeded its quota for the year ended June 30, 1923. The President will touch on the immigration problem in his address to congress Thursday or Friday, and may suggest some rearrangement of quotas.

Wickwire Spencer Merger with Replogle Talked

The first step in plans to bring about the consolidation of the Replogle Steel Co. and the Wickwire Spencer Steel Corp., it is believed, has been taken with the election of J. Leonard Replogle chairman of the Replogle company to the board of directors of the Wickwire Spencer company. Details of the proposed merger have not been divulged but officers of the Wickwire company here admitted that some discussion of the proposal has taken place. Mr. Replogle will identify himself actively with the management of the business of the Wickwire Spencer company, it is reported.

The Wickwire Spencer Steel Corp. Feb. 26, 1920 effected a merger of the Wickwire Steel Co., Buffalo, the Clinton Wire Cloth Co., Morgan Spring Co., Spencer Wire Co., Wright Wire Co. and National Mfg. Co. all of Worcester, Mass., and vicinity. It is a manufacturer of wire and wire specialties. The Replogle Steel Co. was formed Oct. 30, 1919 and acquired the two Wharton, N. J., blast furnaces of the Wharton Steel Co. with large New Jersey iron ore holdings. In April of this year Leonard Peckitt, president of the Empire Steel & Iron Co. was elected president of the Replogle company and a merger of these companies followed. The Empire Steel & Iron Co. had five blast furnaces in New Jersey and Eastern Pennsylvania with an aggregate capacity of 335,000 tons.

The merger of the Replogle Steel Co., the Wickwire Spencer Steel Corp., and a third company is possible.

Jones & Laughlin Steel Co. To Reorganize

Pittsburgh, Dec. 5.—The Jones & Laughlin Steel Co., with $30,000,000 common stock capitalization, shortly is to be reorganized as the Jones & Laughlin Steel Corp. Its capital will be $120,000,000, half of which will be 7 per cent cumulative preferred and the remainder common. Application for a charter has been made to Governor Sproul of Pennsylvania. Other details have been completed, waiting formal action of stockholders and directors at a meeting this week. The company's management will not be affected. The company has been a closed corporation. A limited amount of the new preferred stock issue will be offered to the public.

File Suit in Bankruptcy

Involuntary bankruptcy proceedings were instituted Dec. 4 against the United States High Speed Steel Tool Corp., New York, with an electric steel plant at Green Island, N. Y. The reported liabilities are over $200,000 and the Gotham National bank, as trustee, holds a mortgage for $500,000.

Lauds Engineers Public Service

Presidential Address at Annual Meeting of Mechanical Engineers in New York Points Out That Tendency Is for Engineers To Assume Civic Responsibilities—Technical Papers Are Discussed—Program Includes Inspection Trips

NEW YORK, Dec. 5.—With much of the business to be transacted disposed of at yesterday's conferences, members of the American Society of Mechanical Engineers who are attending the forty-third annual meeting of the association settled down today for the three-day program of technical sessions. Three meetings were held simultaneously in the morning, one being devoted to problems of management, one to machine shop practice and the third to material handling. The meetings were well attended.

Progress in management during the past 10 years was covered in an exhaustive paper by L. P. Alford, which was read by title. This paper is published in part elsewhere in this issue. Mr. Alford's paper was discussed by Dean Dexter S. Kimball who commented on the various interpretations placed on Mr. Taylor's fundamental principles of management by present day industrial engineers. He said these interpretations have not altered the original principles any more than the Bible has been changed by varying interpretations of many religious sects. One speaker criticized Mr. Alford's paper on the ground that it overlooks the importance of cost control as the failure of management. The paper was also discussed by Dean R. L. Sackett and L. W. Wallace.

Many Papers Presented

Other papers presented at this session included "The Installation of Management Methods" by Wallace Clark; "Measurement of Managerial Ability" by A. L. De Leeuw; "Standardization of Terminology" by F. E. Town; and "Standardization of Graphics" by J. J. Swan. The last three named papers were in the nature of progress reports presented by the chairmen of committees dealing with the subjects named. The discussion following these reports brought out the need of uniform terms relating to management problems. It was pointed out that under the present system of loosely applied terms the real meaning of important reports sometimes is confused. The importance of accurately placing a value on managerial ability and also the need of standardizing charts and other graphic records were emphasized by several speakers.

In the session on machine shop practice, F. E. Cardullo, chief engineer, G. A. Gray Co., Cincinnati, presented a paper on gearing for planers. Mr. Cardullo described a system of helical gearing in which the directions of rotation and helical angles of the several gears are chosen so as to counterbalance and minimize end thrust, advantage being taken at the same time of the end thrust to counterbalance the side thrust of the cutting tools. The tooth form adopted is an involute having a 14-degree pressure angle, a pinion addendum of 3/2 p in. and a pinion dedendum of 1/2 p in., p being the normal diametral pitch. The advantages of this form of tooth for the work in question were enumerated at length and dimensions of a pinion, gear and rack design according to the principles set forth in the paper were presented in tabular form.

The importance of problems relating to gears also was emphasized by several other papers in which this subject was discussed. M. Estabrook spoke on testing involute spur gears, while C. H. Logue discussed "Spherical Gears." The operation of a comparatively new form of variable speed drive was outlined in a paper by Walter Ferris in which the application of an oil gear variable speed hydraulic drive to machine tools and manufacturing processes was discussed. F. A. Parsons presented a paper dealing with the amount of power required to remove metal in various mechanical operations.

Following the annual custom, the presidential address and reception was held last evening. Dexter S. Kimball, retiring president, touched on the work of the society and emphasized the growing responsibilities of engineers. He referred to the growing tendency of engineers to assume civic responsibilities saying "A few years ago it was unthinkable and unbelieveable that an engineer should hold high political office. Yet today we see with great satisfaction two engineers occupying gubernatorial chairs. More encouraging still we see an eminent engineer chosen for the first time to sit in the presidential cabinet. These are pioneer adventures in a field hitherto considered exclusive territory of the lawyer and politician and the experiences are being watched with great interest by all thinking engineers. They are undoubtedly the vanguard of a larger invading army."

Exhibit Power Plant Equipment

More than a dozen technical sessions were scheduled for the remainder of the convention. A number of inspection trips to power plants and other points of interest in the vicinity of New York have been arranged and several social features have been planned. Tuesday afternoon an informal dinner and smoker, similar to that which proved so successful last year, will be held. Thursday evening a new departure from the regular program will be made when a dinner dance will be held at the Hotel Astor.

Unusual interest is being attracted to this year's convention owing to the fact that on Thursday, Dec. 7, the National Exposition of Power and Mechanical Engineering opens at Grand Central palace. The show begins at 1 o'clock Thursday and will extend through Dec. 13 with the exception of the intervening Sunday. More than a hundred exhibitors are represented at the exposition.

Tool Makers Recapitalize

Cincinnati, Dec. 5.—Three large Cincinnati machine tool manufacturers within the past few days have made important changes in their capitalization. The Cincinnati Milling Machine Co. about 10 days ago re-incorporated with a capital stock of $6,000,000, incorporators named including Fred A. Geier and C. Wood Walter. Within the past week the Cincinnati Bickford Tool Co. re-incorporated with $2,000,000 capital stock, August P. Teuchter and Fred A. Geier being named among the incorporators, while during the same period the Leblond Machine Tool Co. increased its capitalization to $3,000,000. It is understood the increased capitalization was made to enable the companies involved to distribute stock dividends from surplus to stockholders.

Iron Production Continues Gain

With a Total of 2,845,595 Tons, Pig Iron in November Registers a 215,940-Ton Gain Over October—Merchant Output Increases Heavily—Active Stacks Total 240 on Last Day of Month, a Gain of 22

OUTPUT of coke and anthracite pig iron during November continued the upward trend of the past three months and established a total which was the highest since November, 1920. The gain over October was approximately 216,000 tons, or on an average daily basis, about 10,000 tons per day. In spite of the fact that the winter conditions usually cause a slowing down of production, no evidence of this was shown during November. Operations continued on the rise, 22 additional furnaces becoming active over half of which began production during the latter part of the month.

MONTHLY PRODUCTION

	1922	1921	1920
January	1,645,804	2,414,753	3,012,373
February	1,630,180	1,929,394	2,984,257
March	2,035,908	1,594,866	3,375,768
April	2,070,161	1,190,751	2,752,670
May	2,309,348	1,215,272	2,991,825
June	2,362,455	1,064,007	3,046,623
Total 1st half	12,053,856	9,409,043	18,163,516
July	2,403,030	864,642	3,043,918
August	1,810,665	954,901	3,145,536
September	2,024,008	985,795	3,124,308
October	2,629,655	1,234,450	3,288,341
November	2,845,595	1,414,958	2,935,081
December	.....	1,642,775	2,700,268
Total 2nd half	.....	7,097,521	18,237,452
Grand total	23,766,809	16,506,564	36,400,968

Total production of pig iron in November was 2,845,595 gross tons, which compared with the 2,629,655 tons of October was an increase of 215,940 tons. On a daily basis the output of November represented 94,853 tons per day or a gain of 10,026 tons over the 84,827-ton rate of the preceding month. This was the highest average daily output since December, 1920 when the rate was 87,005 tons per day.

AVERAGE DAILY PRODUCTION

	1922	1921	1920	1919	1918
Jan.	53,090	77,895	97,172	106,654	77,523
Feb.	58,220	68,906	102,904	105,270	82,794
Mar.	65,674	51,447	108,895	99,614	103,548
Apl.	69,005	39,691	91,754	82,479	109,112
May	74,495	39,202	96,510	67,991	111,351
June	78,748	35,466	101,533	70,467	110,538
July	77,517	27,892	98,190	78,200	109,954
Aug.	58,408	30,802	101,468	88,453	108,983
Sept.	67,466	32,857	104,143	82,692	113,774
Oct.	84,827	39,821	106,075	60,142	112,335
Nov.	94,853	47,165	87,836	80,244	111,595
Dec.	.....	52,992	87,105	84,711	110,602
Ave.	71,158	45,223	99,456	83,910	105,290

Merchant iron produced in November totaled 602,884 tons or 100,653 tons greater than the 502,231 tons of October. On an average daily basis this represented 20,096 tons per day which compared with the 16,201 tons per day of October was an improvement of 3895 tons. Nonmerchant or steelworks output in November was 2,242,711 tons, an output which was 115,287 tons better than the 2,127,424 tons of the month before. Reduced to an average daily basis this output represented 74,757 tons per day or a gain of 6131 tons over the 68,626-ton daily rate of October. From these figures it is shown that the merchant gain was almost as large as the nonmerchant gain.

Blast furnaces operating on Nov. 30 total 240, as compared with 218 on Oct. 31 and 189 on Sept. 30. This is the highest number of stacks active since November, 1920 when 255 were in blast. Fourteen merchant stacks were blown in during the month and one blown out the net gain being 13 stacks. Of the nonmerchant class 10 stacks were blown in and one blown out, the net gain being nine stacks. The total net gain of both, therefore, was 22 stacks. Of the total number of stacks operating 70 were merchant and 170 were nonmerchant. On the last day of the month the Steel corporation was operating 86 furnaces as compared with 79 on Nov. 31 and 73 on Sept. 30.

DIVISIONS OF PRODUCTION

1921	Merchant	Non merchant	Spiegel	Ferromanganese	Other ferro
Jan.	474,135	1,940,618	2,542	20,960	4,950
Feb.	338,383	1,591,011	11,566	17,447	4,067
Mar.	276,559	1,318,307	19,746	17,682	3,222
Apl.	238,539	952,212	14,744	13,266	3,163
May	215,703	999,569	2,379	6,853	4,553
June	178,854	885,153	.....	4,536	6,090
July	141,326	723,316	4,015	1,509	3,178
Aug.	134,491	820,410	.....	3,878	.....
Sept.	157,728	828,067	.....	3,289	35
Oct.	218,990	1,015,460	.....	3,902	990
Nov.	304,535	1,110,423	.....	3,525	1,065
Dec.	372,000	1,270,775	.....	3,847	1,064
Tot'l	3,051,243	13,455,321	55,042	100,694	32,377
1922					
Jan.	388,322	1,257,482	1,230	5,644	825
Feb.	355,455	1,274,725	4,930	3,618	872
Mar.	390,643	1,645,265	2,095	11,604	1,102
Apl.	375,814	1,694,347	4,211	14,998	828
May	410,404	1,898,944	4,902	15,432	405
June	423,672	1,938,783	4,817	18,254	854
July	441,753	1,961,278	7,176	18,873	1,887
Aug.	343,522	1,467,143	7,925	11,402	976
Sept.	353,604	1,670,404	4,235	10,681	934
Oct.	502,231	2,127,424	12,285	9,193	1,080
Nov.	602,884	2,242,711	4,192	13,232	961

NOVEMBER PIG IRON

	No. of stacks	No. in blast last day of month Nov.	Oct.	Total tonnage made— Merchant	Nonmerchant	Totals— November	October
Pennsylvania	159	86	79	79,088	935,563	1,034,651	964,193
Ohio	80	56	51	152,066	577,234	729,300	675,129
Alabama	43	23	22	133,891	75,043	208,934	208,756
Virginia	19	4	1	12,885	.....	12,885	2,592
New York	26	14	12	63,847	98,140	161,987	145,239
New Jersey	4	1	1	12,071	.....	12,071	13,134
Illinois	26	17	16	61,641	196,631	258,272	215,665
Colorado	5	1	1				
Indiana	16	13	12	29,976	249,952	279,928	268,069
Maryland	6	5	5				
Wisconsin	6	3	2				
Kentucky	7	1	1				
West Virginia	5	2	1	20,514	28,939	49,453	45,926
Tennessee	14	7	7				
Washington	1	0	0				
Georgia	2	0	0				
Texas	1	0	0				
Minnesota	3	3	3	30,430	49,299	79,729	68,394
Michigan	4	4	4				
Missouri	1	0	0				
Spiegel and ferro—all states	..	..	..	6,475	11,910	18,385	22,558
Totals	428	240	218	602,884	2,242,711	2,845,595	2,629,655

Furnaces blown in during November were: In Ohio: Globe, Globe Iron Co.; Blanche, Marting Iron & Steel Co.; Hamilton, Hanging Rock Iron Co.; Sarah, Kelly Nail & Iron Co.; one Ohio, Carnegie Steel Co. In Pennsylvania: Clinton, Clinton Iron & Steel Co.; Warwick No. 1, Eastern Steel Co.; Eliza No. 2, Jones & Laughlin Steel Co.; Cambria No. 1, Bethlehem Steel Co.; Robesonia, Robesonia Iron Co. Ltd.; Scottdale, McKinney Steel Co.; Neville Island, Carnegie Steel Co. In New York: Susquehanna No. 4, Rogers-Brown Iron Co.; Standish, Chateaugay Ore & Iron Co. In Virginia: Buena Vista, Alleghany Ore & Iron Co.; Low Moor A, Low Moor Iron Co.; Pulaski, Pulaski Iron Co. In West Virginia: Riverside No. 2, National Tube Co. In Alabama: Ensley No. 5, Tennessee Coal, Iron & Railroad Co.; North Birmingham No. 3, Sloss Sheffield Steel & Iron Co. In Indiana: Gary No. 6, Illinois Steel Co. In Illinois: South Works Old No. 2 and South Works New No. 9, Illinois Steel Co. In Wisconson: Bay View, Illinois Steel Co.

Stacks blown out during the month were: In Alabama: Woodward No. 1, Woodward Iron Co. In Illinois: Joliet No. 1, Illinois Steel Co.

Coast Demand Is Strong

Iron and Steel Market Well Maintained—Activity Noted in Structural Shapes—Plate Market Brisk

San Francisco, Dec. 1.—Demand for iron and steel products in the local market is being well maintained. Of primary interest during the past week was the announcement of the Steel corporation regarding first quarter prices on both sheets and tin plate. Up to and including Nov. 21 3377 permits had been issued in Los Angeles with a valuation of $7,492,692 as compared with 3474 permits and a valuation of $8,322,213 for the corresponding period in October.

Pig Iron and Coke

For the time being foreign iron is the only material being sold on the Coast, and prices range from around $28 c.i.f. Pacific coast ports duty paid on round tonnages to $31 and $32 for carload lots and less. The best that can be done on No. 2 southern here is $23 furnace which means a minimum c.i.f. price coast ports of $34 as the rail rate from Birmingham to Mobile is $3.25 and the water rate from there on, $6 a net ton.

Most foundries have good stocks of coke on hand. Another shipment of British coke, approximately 500 tons, is expected in port this week and will be distributed in small lots at from $17 to $18 a ton c.i.f. San Francisco.

Bars, Plates and Shapes

Demand for merchant steel bars continues in fair volume composed mostly of small tonnages. The Pacific Coast Steel Co. has started another open hearth furnace, making a total of seven out of twelve furnaces in operation this week. During the past week several fair sized tonnages of reinforcing material have been awarded and the total pending exceeds 4000 tons. Bids are being taken on 1800 tons for a factory building for the Pacific Borax Co., Wilmington, Cal.

The market for plates is exceptionally active and some large tonnages are up before the trade, the greatest portion coming from oil tank fabricators. Prices appear to have weakened a little during the past week, and 2.35c c.i.f. San Francisco has been quoted by several companies, although 2.40c to 4.45c is the general quotation. During the past week the Associated Oil Co. awarded four 80,000-barrel and three 55,000-barrel tanks to the Western Pipe & Steel Co. involving 1500 tons in all. No action has yet been taken on the 3600 tons for the Shell Oil Co.'s refinery at Wilmington, Cal. The Standard Oil Co. is inquiring for 1900 tons of plates and has awarded 400 tons to an independent company.

Structural shape business continues active as far as small tonnages are concerned and fabricators report their shops filled. During the past week several large projects have been let, outstanding among which was 1200 tons for the Rosslyn hotel annex in Los Angeles, awarded to the Llewellyn Iron Works. Prices are firm at 2.40c c.i.f. San Francisco. In the Nov. 16 IRON TRADE REVIEW it was reported that the Pacific Rolling Mills Co. had been awarded 450 tons for a hotel in Reno, Nev. The amount involved was in error and should have read 45 tons.

Other Finished Material

No municipal awards for cast iron pipe have been made during the past week, with business coming in from private sources quiet. Action is expected to be taken before the end of the week on over 2800 tons for Los Angeles and 237 tons for Santa Ana.

Pipe men report no abatement in demand for both standard pipe and oil country goods and heavy tonnages of the latter are being booked. Oil field operations reported to the state oil and gas supervisor for the week ending Nov. 25, show 31 new wells started, as compared with 47 during the previous week.

Warehouse

No changes in out-of-stock prices have occurred recently. Jobbers report that the volume of business for November will compare favorably with that for October. Sheets and pipe are probably the most active lines at the moment.

Decrease Shown

In Coast Iron and Steel Demand—November Business Is Large

Seattle, Dec. 1.—With the approach of cold weather and inventory time there is a slight easing off in the demand for iron and steel products. Jobbers state however that November business showed an unexpected gain over October and it is believed it will measure up well with the record for August. Several good sized contracts, involving considerable tonnages of steel, are to be let in December while many projects will open early in the year. Representatives of independent interests report it more difficult to do business owing to the involved state of affairs with reference to the expansion of the two leading producers.

Pig Iron and Coke

Prices are firm and the turnover holding up well. Notwithstanding the softness of the domestic pig iron market neither eastern nor Gulf iron can compete on this coast under present conditions. Water freight rates are low but the delivered price cannot meet that of foreign iron. The best grades of foreign iron are selling for $32.75 and $33 here. Iron from India has been offered in this market but the price is out of line. Sellers will not accept delivery weights and importers will not buy on weights at point of shipment because of shrinkage due to rehandling at Hongkong or Japanese ports. Coke is selling in fairly good tonnages as consumption is almost back to normal. No more foreign coke is being bought. Prices are stationary.

Bars, Plates and Shapes

These items have shown a larger volume than during October and jobbers are very optimistic over the outlook. Warehouse prices are unchanged. It is understood that the Bethlehem Steel Co. is quoting about 2.40c and the Steel corporation is on a basis of 2.45c. Independent interests are asking 2.50c. Producers of bars state that business has dropped slightly. Several good sized bar tonnages are to be awarded in December. At the local plant of the Pacific Coast Steel Co. conditions are unchanged. Prices of bars are stationary. One local firm has sold another lot of 250 tons of refinorcing bars to China. No foreign bars are being imported.

Other Finished Material

Jobbers state that demand for sheets, bolts, nuts, rivets, building material and other items is still strong. Prices are unchanged. Early in December bids on two large projects, including an office building and a home for the aged, will be opened in Seattle. The estimated cost is $1,000,000.

There is considerable railroad work being done in Washington and Oregon, this consisting mostly of extension of logging roads. Both relaying and new rails are being purchased in sizable tonnages. One interest is importing German 60-pound rails and is finding a ready sale for them notwithstanding the new tariff. These rails are being sold here at around $46, including all accessories, tariff paid. At this price importers claim foreign rails are cheaper than relayers which are obtainable at about $40 including accessories. New American rails are worth about $60 here with plates and spikes.

Old Material

This market continues brisk with consumers buying all supplies available. Scrap dealers are still having difficulty in replenishing stocks. Prices are firm with No. 1 cast iron being quoted at about $22.50 and steel at $11.50 and up. Japanese buyers are still taking good tonnages of steel scrap on which the water freight to the Orient is firm at $5 per net ton.

Can Prices To Hold

New York, Dec. 5.—Prices on packers' cans for 1923 as yet are unannounced but it is known there will be no change from the present quotations as far as term contracts are concerned. This is because the $4.75 base price on tin plate has been reaffirmed for next year, and present term contract prices on cans already are on the basis of $4.75 for tin plate. Present term contract prices on sanitary packers' cans are as follows: $14.75 per 1000, f.o.b. shipping point, for No. 1; $20.31 for No. 2; $26.11 for No. 2½; $27.24 for No. 3, 4⅛ inches; $60.45 for No. 10.

British Railways Reduce Rates

Buying Slows Up Pending Result of Cut in Transportation Costs Dec. 1 on Pig Iron, Steel, Ferromanganese, Coal, Coke, Ore and Limestone— American Inquiry for 25,000 Tons of Iron Pending

Iron Trade Review Staff Cable

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

Sterling—$4.54

LONDON, Dec. 4.—Inquiry for pig iron from the United States is fair. About 25,000 tons is pending though no sales were consummated in the past week as far as reported.

British railways have lowered their freight rates effective Dec. 1 on coal, coke ore, limestone, pig iron, semifinished and finished steel, and ferromanganese. The reduction will reduce the estimated cost of producing pig iron 2 shillings ($0.45) a ton. Buyers are awaiting the effect of the lower rates on prices and the market is perceptibly slower. Not much activity is expected until after the holidays. Two blast furnace stacks at Middelsbrough have been blown in on hematite, the only strong department of the pig iron trade at present.

Continental steel prices are reacting up to the British levels as a result of improvement in exchange. Belgian billets for export are 10 shillings ($2.27) higher, at £6 10s ($29.51), Antwerp.

A disagreement over the allotment of a French order for 50,000 tons of rails is disturbing the French steel syndicate, the powerful Societe De La Chiers threatening to withdraw from the syndicate. The French plate syndicate booked 45,000 tons of plates in October.

Continental Currencies Now Favor British Mills

European Staff Special

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

Sterling—$4.50

BIRMINGHAM, Eng. Nov. 24.—There are signs that the trade improvement is gradually gaining momentum. The steady gain in the number of operating furnaces, amounting, to 12 in a month and 69 in a year, is a hopeful sign, and it is now assured that the next report will show a further increase. A marked growth of confidence has coincided with the election of a conservative government. Considerably new business in railway material has been placed during the past week, which must bring orders to steelworks. The keels of several ships are to be laid by the end of the year.

The swing of the currency pendulum on the continent for the time being favors the British manufacturer. This is of commanding interest because of the extreme variations recorded. Birmingham merchants have this week been receiving from Belgium daily wires modifying previous quotations. The variation in their prices in about 10 days is at least £1 ($4.50). In isolated cases it has been £1 2s 6d ($5.06). The sharp recovery has placed Belgian steel entirely out of competition with the English product. These rapid variations have frightened away some buyers. There are signs that the price changes are due in a measure to the filled up condition of Belgian order books. Consequently consumers are turning to British steelworks. English billets are rather scarce, enabling manufacturers to maintain a minimum of £7 ($31.50), a number of firms ask 2 shillings 6 pence ($0.56) more, but it is quite likely that some steelworks which produce billets in large quantities will get to work shortly to meet this demand.

General products have shared in this revision of price. No. 3 Belgian iron, for example, having been raised in a few days from £6 ($27) to £7 ($31.50) f.o.b. Antwerp. Prices of joists have varied a great deal. During the low period of the franc they were quoted at £5 12s 6d ($25.31) f.o.b. Antwerp. Delivery could not be given under eight to ten weeks. The Belgians recently have based their quotations on British sizes and chemical analysis.

Keen buyers who have been attracted by Belgian material have endeavored to induce the Belgians to accept payment in francs. Nothing came of the suggestion, and business is for the time being suspended by uncertainties in the currency.

A number of British blast furnaces were started to supply the American demand. This has now fallen off, much in accordance with expectation, especially as IRON TRADE REVIEW cablegrams indicated a return to normal conditions in America. Foreign business has gone off generally in the Cleveland district, with some relapse in price. A lot of shipments have still to be made from Middlesbrough, but the falling off of American demand, coinciding with poor continental buying, has weakened prices, sales having been made below the recognized figure of £4 12s 6d ($20.81). Hematite prices also are slightly easier.

The position continues quite hopeful on the West Coast, where the output from 15 furnaces is readily disposed of. At least three additional furnaces are to be started before the end of the year. Buying by America is fairly maintained in that area and large shipments are continually being made. The continental business is much stronger there than on the East Coast. Scotland, which has been specially active in lighting up furnaces, will have four additional blast furnaces at Wishaw at work within the next few weeks, the plant of this particular company, the Glasgow Iron & Steel Co., having been idle for two years.

The Midland blast furnaces are finding a slight improvement in inqiury, some of their customers having made proposals for contracts for the first quarter of 1923. Makers prefer to take their chance of improvement in the general market, in view of the severe conditions now prevailing. The price of coke is still tending upward, and it is impossible to get anything like a corresponding increase in the selling price of pig iron.

The improvement at last appears to have reached Sheffield where a number of additional men have been employed at such works as those of Steel, Peach & Tozer; Brown, Bayley; Cammell Lairds, and Hadfields. The large concerns producing railway wheels and axles have benefited from good orders placed with Birmingham firms for several hundred wagons for home and Indian railways. The Metropolitan-Vickers Electrical Co. has taken an order for 78 electric locomotives for use on the South African railways.

The Midland iron and steel works hope to benefit from lower railway rates expected to follow the completion of large plans for amalgamation which it is undertsood are now approaching completion.

An order for several hundred tons of steel sheets is reported placed in South Staffordshire this week on export account. The price was higher than was quoted by the large modern mills on the coast. The latter are committed well into February and the bulk of the material was wanted by the end of the year.

The galvanized sheet trade apparently has entered upon an era of activity. The price of £17 10s ($78.75) appears to be the accepted minimum and the demand has enabled some additional mills to be brought into operation in South Staffordshire.

Recently mattress wire was reduced by

Current Iron and Steel Prices of Europe

British Market

Home Market Prices. Gross Tons at Works or Furnace.

Corrected to Date by Cable

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	28.95	6 7 6
Sheet bars	28.95	6 7 6
Wire rods	44.27	9 15 0
FINISHED STEEL		
Steel bars, England, ½ to 3-inch	37.46	8 5 0
Steel bars, England, ½ to 3-inch, for export	35.19	7 15 0
Plates, ship, bridge and tank, England	38.59	8 10 0
Plates, ship, bridge and tank, England, for export	36.32	8 0 0
Plates, ship, bridge and tank, Scotland	37.46	8 5 0
Plates, ship, bridge and tank, Scotland, for export	35.76	7 17 6
Beams, England	37.46	8 5 0
Beams, England, for export	34.05	7 10 0
Beams, Scotland	36.32	8 0 0
Beams, Scotland, for export	34.05	7 10 0
Sheets, black, 24 gage	48.81	10 15 0
Sheets, galvanized, 24 gage	79.45	17 10 0
Rails, 60 lbs. and over	36.32	8 0 0
Rails, 60 lbs. and over, for export	32.92	7 5 0
Tin plate, base box, 108 lbs	4.48	0 19 9
Steel hoops	46.54	10 5 0
Steel hoops, for export	45.40	10 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	21.23	4 13 6
Hematite, West Coast, Mixed Numbers	22.14	4 17 6
Basic Middlesbrough	18.16	4 0 0
No. 3 Foundry, Middlesbrough	21.00	4 12 6
No. 3 Foundry, Derby, Leicester, Nottingham	18.73	4 2 6
No. 3 Foundry, Northamptonshire	18.16	4 0 0
No. 3 Foundry, Staffordshire	18.16	4 0 0
No. 3 Foundry, Scotch	22.14	4 17 6
Ferromanganese, 76 to 80 per cent	68.10	15 0 0
Ferromanganese, 76 to 80 per cent, for export	64.70	14 5 0
COKE		
Yorkshire furnace	5.11	1 2 6
Yorkshire foundry	6.25	1 7 6

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Marks per metric ton
PIG IRON		
Hematite, Oberhausen	17.92	143,365
Foundry, No. 3, Oberhausen	13.76	110,103
Bessemer Stahleisen, Siegen	17.84	142,697
Foundry, No. 1, Oberhausen	13.77	110,173
Luxemburg Foundry	13.18	105,465
COKE		
Ruhr furnace	2.56	20,487
Ruhr foundry	2.54	20,321
SEMIFINISHED STEEL		
Billets	21.71	173,700
Sheet bars	26.03	208,200
Wire rods	25.41	203,300
FINISHED STEEL		
Standard rails	11.50	92,000
Merchant bars	29.38	235,000
Structural shapes	29.28	234,200
Ship plates	33.05	264,400
Medium plates, 3 to 5 millimeters	37.08	296,600
Sheets, below 3 millimeters	41.21	329,700
Tin plate	67.75	542,000
Plain wire	22.63	181,000
Bands and strips	34.39	275,100

All prices are f.o.b. furnace or mill.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	21.79	310
Basic Bessemer, Lorraine	17.22	245
Foundry, Longwy, No. 3, sand-cast	16.52	235
Foundry, Longwy, No. 3, chill-cast	17.22	245
Ferromanganese, 76 to 80 per cent	66.43	945
COKE		
French furnace	6.47	92
German furnace, f.o.b. frontier	6.68	95
French foundry	8.72	124
SEMIFINISHED STEEL		
Blooms	22.50	320
Billets	24.61	350
Sheet bars	26.71	380
FINISHED STEEL		
Standard rails	38.67	550
Merchant bars	31.64	450
Angles	33.39	475
Normal beams and profiles	33.39	475
Plates, ship and tank, 10 millimeters and thicker	42.88	610
Plates, bridge and tank, 5 to 10 millimeters	45.70	650
Sheets, black, 3 millimeters	48.51	690
Sheets, blue annealed, 2 millimeters	51.32	730
Shafting, cold-drawn, 40 to 60 millimeters	58.00	825
Pars, 2 per cent nickel steel	98.42	1400

All prices are f.o.b. furnace or works.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	15.30	235
Basic open-hearth, Belgian	15.62	240
Gray forge, Belgian	15.30	235
Foundry, No. 3, Belgian	17.58	270
Foundry, No. 3, Luxemburg	17.25	265
Foundry, No. 3, Lorraine	17.25	265
SEMIFINISHED STEEL		
Blooms	21.16	325
Billets	22.46	345
Sheet bars	23.44	360
Wire rods	33.85	520
FINISHED MATERIAL		
Standard rails	28.97	445
Merchant bars	28.32	435
Normal beams and profiles	25.06	385
Plates, 5 millimeters and thicker	29.95	460
Sheets, black, 3 millimeters	33.20	510
Sheets, galvanized, 1 millimeter	91.79	1410
Plain wire	41.99	645
Galvanized wire	57.94	890
Wire nails	32.88	505

All prices are f.o.b. furnace or works.

£2 10s ($11.25) per ton to enable manufacturers to meet American, Canadian and German competition, which is strong. A Swansea firm recently secured an order from the Standard Oil Co. of New Jersey for 150,000 boxes of tin plate. The maker obtained special freight concessions from shipowners to enable it to meet American and other competition.

German Prices Approach World Level

European Special Service

DUSSELDORF, Germany, Nov. 24.—Pig iron prices continue to advance with No. 3 foundry now quoted at 110,103 marks ($15.80) a ton. Hematite corresponding to the American bessemer grade is 143,365 marks ($20.50). These prices, although not up to the American level, are now fairly on a par with other European markets; French No. 3 foundry being equivalent to $15.25; Belgian equivalent to $16.20; Luxemburg equivalent to $15.90; and British No. 3 Midlands equipment to $17.90 furnace.

Mark—$0.00014

Unless there is a further drastic fall in the mark, German pig iron prices are likely to be fairly stable at present levels. One of the causes of the recent advance is the rise in the cost of fuel which has brought Ruhr furnace coke to 20,487 marks ($2.93) a metric ton.

Semifinished and finished steel prices are higher in sympathy with pig iron. Billets for delivery at the mills' convenience are now 173,700 marks ($24.70) and sheet bars are 208,200 marks ($29.80) a ton with bars, plates and shapes at 234,200 to 296,600 marks, equivalent to 1.52c to 1.92c. The German market has

fully made up the depreciation in exchange and this has been done much more quickly this time than heretofore.

Merchants and warehouses are selling bars at 298,500 marks ($41.79), shapes at 394,800 marks ($55.27), bands at 349,400 marks ($48.92), plates at 336,400 marks ($47.10), and sheets at 763,900 marks ($106.94) a ton for immediate delivery out of stock. These prices are equivalent to 1.95c for bars to 5.00c per pound for sheets. These figures may be compared with American warehouse prices of 2.80c, Chicago, for bars and 4.85c for sheets.

Wages of ordinary common laborers are now about 200 marks ($0.03) an hour. This represents an advance of from 50 per cent to 60 per cent within the past few weeks. The rise in the cost of living has been still greater and the result has been riots in Cologne, Düsseldorf, Solingen, Remscheid, etc., which have seriously interfered with production.

Business is inactive both internally and externally and owing to the advance in prices. Franco-Belgian competition is becoming much more severe in the export field.

October British Pig Iron Exports Heavy

European Special Service

MIDDLESBROUGH, Eng., Nov. 24.—An optimistic outlook prevails in the British iron and steel export trade. Figures for last month show that the export business on the Northeast Coast was the largest in point of shipments since 1915. A larger tonnage of Middlesbrough pig iron crossed the Atlantic during October than in any previous month since before the war, the total being 28,628 tons. Further shipments of pig iron to America were made this week.

The report of exports from the port of Middlesbrough for October disclose a decline in the German demand. In September 8460 tons were sent to German buyers but in October only 1030 tons were delivered. Steel shipments to the East were on a heavier scale as were also the exports to Australia and New Zealand, and reliable authorities anticipate still better demand due to the fact that many schemes of railway construction practically decided upon before the war have since been held up. India was then engaged in inaugurating 30,000 miles of railway development, and the Latin republics 40,000 miles.

Total exports of pig iron in October from Middlesbrough were 54,782 tons, of manufactured iron, 3710 tons, and of manufactured steel, 27,224 tons.

The following table shows the more important exports of pig iron, manufactured iron and steel from the port of Middlesbrough for the month of October.

COLONIAL AND FOREIGN

To	Pig Iron Tons	Manufactured Iron Tons	Steel Tons	Total Tons
Argentine Republic	240	...	282	522
Belgium	3,826	...	45	3,871
British W. Indies	...	388	301	689
Canada	9,950	500	766	11,216
Ceylon	20	1	248	269
China	...	...	277	277
Egypt	...	...	527	527
Finland	1,685	...	25	1,710
France	1,295	...	8	1,303
Germany	1,030	...	163	1,193
Holland	700	...	448	1,148
Hong Kong	300	...	1,072	1,372
India	450	2,554	11,144	14,148
Italy	3,054	...	...	3,054
Japan	...	...	2,199	2,199
Natal	...	...	740	740
N. S. Wales	30	10	1,640	1,680
Norway	...	...	208	208
New Zealand	...	10	370	380
Portuguese E. Africa	...	8	370	378
Portuguese W. Africa	...	...	3,058	3,058
Spain	946	...	30	976
Straits	55	174	351	580
Sweden	1,928	...	104	2,032
United States	28,628	...	...	28,628
Victoria	589	7	1,385	1,981
W. Australia	...	...	1,066	1,066
Total foreign	54,762	3,710	27,224	85,696

An improvement is becoming manifest in the demand for steel and furnaces are being gradually relighted. Continental material is still offered at less than the British cost of production. Plates have been offered at £7-10-0 ($33.45) by continental sellers compared with £9 ($40.14) to £9-10-0 ($42.37) asked by British manufacturers. Even at £9 ($40.14) delivered, it has been asserted that British plates are put on the market at a loss of approximately £1.

Sterlina—$4.46

Coal exports continue to progress steadily and satisfactory contracts for next year are being negotiated with continental buyers at about £1-4-0 ($5.35) for best steams. British coal production is on an improved scale. For the week ended Oct. 2 the coal production of Great Britain was 5,355,400 tons—the highest weekly output since May 1919. Over a million tons were produced from the Northumberland and Durham mines.

The ascertainment relating to the wages payable to miners in Northumberland shows they will be increased 0.85 per cent which increases the pay to higher paid men about ½-penny per shift.

Foreign ore business eased toward the end of the month and Rubio ore was obtainable at £1-2-6 ($5.13) to £1-2-9 ($5.24). The imports of foreign ore to Middlesbrough during October were slightly heavier than for September. The respective totals were: October 141,284 tons; September 137,521 tons.

British October Trade Makes Large Gain

Birmingham, England, Nov. 24.—The British Board of Trade's return for October shows a total export of iron and steel products, including scrap of 354,595 tons, as compared with 289,344 tons in September and 161,683 tons for October last year. During the ten months the exports total 2,818,035 tons as against 1,325,243 tons for the corresponding period of last year.

The total iron and steel imports including scrap, for October amounted to 100,252 tons as compared with 83,186 tons in September and 189,536 tons for October last year. For the ten months period the imports amounted to 782,487 as compared with 1,516,281 for the corresponding period of 1921.

The large comparative increases in exports are due mainly to the increased shipments of pig iron to America. The forge and foundry pig iron exported in October to various foreign destinations totaled 78,463 tons compared with 3885 tons in the corresponding month of last year. Great Britain exported acid pig iron to the amount of 40,825 tons against 3709 tons last year. In ferro-alloys the tonnage is 10,671 against 1858 a year ago.

EXPORTS

	Month ended October 1921	Month ended October 1922	Ten months ended October 1921	Ten months ended October 1922
Scrap	5,835	7,467	23,660	130,075
Pig iron:				
Forge and foundry	3,885	78,463	42,358	258,826
Acid	3,709	40,825	37,836	204,064
Basic	20	.....	767	3,242
Ferroal'ys	1,858	10,671	28,448	122,954
Steel ingots	....	39	158	450
Blooms, billets, slabs	115	730	1,019	5,779
Bars, rods, angles, shapes, etc.	13,998	25,657	109,614	189,840
Castings iron	48	120	528	789
Castings steel	91	18	359	397
Forgings iron	....	24	67	125
Steel girders, beams, etc.	2,949	3,857	34,614	43,752
Hoops and strips	2,463	4,780	17,065	37,055
Plates and sheets, not g alvanized armor pl't's	850	445	850	4,420
Plates and sheets, not under ⅛-in. thick	7,544	6,551	117,528	59,440
Plates and bl'k sheets under ⅛-in. thick	3,758	14,181	34,605	133,353
Black plates	1,382	7,154	9,578	46,897
Plates and sheets coated:				
Gal. sheets	32,222	39,487	125,833	425,115
Tin plate	25,356	35,125	168,996	368,577
Cast tubes, pipes and fittings	4,443	11,065	49,365	59,162
Wrght. tubes, pipes and fittings	5,012	7,680	65,660	63,429
Rails for trams	934	122	5,507	4,751
R'y rails	14,864	17,146	122,702	210,166
Sleepers and fishplates	5,815	10,366	46,541	128,282
Tires and axles	1,810	797	19,714	9,463
Wheels and axles	1,182	1,130	21,691	20,134
R'y material, other types	3,755	3,163	29,422	33,243
Wire	1,709	5,076	17,273	40,871
Wire mfrs.	1,578	3,789	17,621	26,753
Nails and tacks	689	1,254	6,964	9,683
Wood screws	115	315	1,790	2,336
Bolts and nuts	948	1,316	11,875	12,329
Mfrs. of cast iron	1,107	1,252	15,038	11,339
Anchors, cables and chains	1,240	853	12,856	9,138
Bedst'ds and finished parts	324	467	3,135	5,860

Hollow ware	667	1,112	7,598	8,679
Other mfrs. of iron and steel	8,862	11,440	109,046	120,883
Total including scrap.	161,683	354,595	1,325,243	2,818,035

IMPORTS

	Month ended October		Ten months ended October	
	1921	1922	1921	1922
Pig iron:				
Forge and foundry.	51,838	6,260	342,464	43,910
Acid	240	....	8,698	155
Basic	40,476	10,144	170,264	78,758
Ferroalloys	1,764	1,480	5,241	8,320
Steel ingots.	124	277	5,934	3,094
Scrap	16,767	9,614	156,515	94,513
Blooms, billets, slabs:				
Iron	111	1,020	5,924	10,005
Steel	17,223	25,408	149,494	125,421
Bars, rods, angles, shapes, etc.:				
Iron	8,701	9,659	111,296	56,957
Steel	10,287	6,124	83,822	52,285
Steels:				
Wire rods	3,050	3,679	21,490	40,848
Other st'l	6,456	2,402	76,226	28,820
Spec. st'ls	63	14	1,163	460
Cast'gs, iron	328	50	8,628	2,325
Cast'gs, steel	418	269	5,187	2,764
Forg'gs, iron	194	8	2,697	223
Forg'gs, steel	50	14	440	780
Steel girders, beams, etc.	3,904	4,210	31,461	29,373
Hoops and strips	4,128	847	24,570	18,305
Plates and sheets	5,809	3,599	115,310	30,246
Cast tubes, pipes and fittings	2,487	1,918	24,290	16,102
Wr'ght tubes, pipes and fittings	1,548	1,529	23,071	18,310
Rails for trams	283	....	21,046	2,767
R'y rails	2,085	38	21,291	10,422
Tires and axles	11	457	358	1,011
R'y material, other types	658	558	7,760	5,060
Wire	3,054	2,907	28,351	29,979
Wire nails including staples	3,462	5,115	28,426	34,896
Wire mfrs.: Other sorts	172	283	2,136	3,883
Nails and tacks	185	189	3,830	2,610
Bolts and nuts	220	296	5,437	4,155
Hollow ware	1,194	575	9,075	10,731
Other mfrs. of iron and steel	2,177	1,297	13,900	14,641
Total, including scrap.	189,536	100,252	1,516,281	782,487

British Iron and Steel Production Gains

London, Nov. 24.—The production of pig iron in Great Britain in October, according to the official figures of the National Federation of Iron & Steel Manufacturers, was 481,500 gross tons compared with 430,300 tons in September, 411,700 tons in August and 288,000 tons in January. There were 151 furnaces in blast on Oct. 31 compared with 139 on Sept. 30; 126 on Aug. 31; and 117 on July 31. Although the production of pig iron has been increasing steadily all this year and is now double that of a year ago, the October rate is only 72 per cent of the monthly average for 1920 and 56½ per cent of the monthly average of 1913. The pig iron production in October included 129,900 tons of hematite, 151,000 tons of basic, 134,000 tons of foundry, and 31,500 tons of forge grades.

The production of steel ingots and castings in October was 565,200 tons compared with 555,900 tons in September, 528,400 tons in August and 327,500 tons in January. Steel production, which has also been steadily increasing throughout the year, is now 75 per cent of the monthly average of 1920 and 88½ per cent of the monthly average in 1913. These ratios reflect clearly the increased capacity which was brought into action during the war.

Details of the pig iron and steel output for the past three years are shown in the accompanying table:

	1922	1921	1920
Pig Iron			
January	288,000	642,100	665,000
February	300,100	463,600	645,000
March	389,800	386,000	699,000
April	394,300	60,300	671,000
May	407,900	13,600	739,000
June	369,200	800	726,000
July	399,100	10,200	750,600
August	411,700	94,200	752,400
September	430,300	158,300	741,000
October	481,500	235,500	533,200
November	.....	271,800	403,200
December	.....	275,000	682,500
Steel Ingots and Castings			
January	327,500	393,400	754,000
February	418,800	483,500	798,000
March	549,400	359,100	840,000
April	404,200	70,600	794,000
May	462,300	5,700	846,000
June	400,200	2,700	845,000
July	473,100	117,200	789,900
August	520,800	434,100	709,200
September	555,900	429,300	884,700
October	565,200	405,400	544,300
November	.....	443,800	505,100
December	.....	381,100	746,600

Mark Scrap Prices Lower

(Concluded from Page 1536)

Consumers are buying at a minimum to cut down inventories and soon hold-up orders will be received with the same purpose in view. Opening of the Pennsylvania and other railroad lists today is awaited with interest since it is expected most bids will be low. Except for an occasional carload or two, practically no buying by consumers has been done since the purchases made for Midland, Monessen and Donora, Pa., plants.

Buy To Fill Old Orders

Buffalo, Dec. 5.—Scrap dealers are paying $19.50 for heavy melting steel to fill old orders. In this they are going a trifle higher than steelworks will pay. All the works are buying a certain amount of tonnage, except the largest consumer. Dealers are optimistic and look for a general spurt before the end of the month. Cleveland has been supplying a market for local borings during the week at a price of $16.50 Cleveland, but this production is now falling off in Buffalo. Demand for low phosphorus, cast, and malleable is nominal.

Buying Being Done Quietly

Cleveland, Dec. 5.—Considerable volume of scrap is being placed in this district but is being done in a quiet way. Consumers, instead of making their needs generally known, are picking up tonnages when attractive offers appear. Important sales of machine shop turnings have been made in the Mahoning valley within the past several days and Lorain also has bought within the past week. Despite these transactions aggregating several thousand tons, the market is weak. Heavy melting steel is down 50 cents to $18 and $18.50; hydraulic compressed sheets, off 25 cents, to $16 and $16.50; bundled sheets down from $14 and $14.25 to $12.50 and $13; old steel rails for melting, down from $17.50 and $18 to $16 and $16.50; old steel rails for rolling, off $1 to $20 and $20.50; No. 1 cast down from $21 and $21.75 to $20 and $21; heavy cast, down 50 cents to $16 and $16.25; pipes and flues, down $1 to $13 and $13.50. Valley prices are unchanged.

First Half Order Booked

Cincinnati, Dec. 5.—Except for the placing of an order for a round tonnage for first half year requirements of one of the big mill interests in this territory, little activity is noted in the local scrap market. Few buyers are in the market except for small tonnage lots for current needs and no inquiries of consequence are before the trade. A few melters have indicated they probably will be in the market toward the latter part of the month but the majority is expected to hold off until after the first of the year. Dealers in some instances are reported to be making concessions in order to get desirable business on their books and the market displays an easing tendency but current schedules have not been revised.

Consumers Not Buying

St. Louis, Dec. 4.—Weakness and apathy continue to feature the scrap market. Consumers are purchasing practically nothing and activity is confined to trading among dealers. There was no change in prices worthy of note, the revisions in dealers' lists being chiefly to balance relative values. The steadiness was due largely to a fair sized short interest which has developed locally, and some inquiry from outside cousuming points. Some grades have dropped sufficiently to permit their profitable shipment to eastern centers. Stocks in yards have increased perceptibly. The sudden cessation of buying left a lot of material without an outlet, and this has been laid down extensively in the yards. In addition the railroads have been selling heavily. Lists before the market include: Baltimore & Ohio, 6000 to 8000 tons; Pennsylvania, southwestern region, 5000 tons; Louisville & Nashville, 8000 tons and several lesser ones. Considerable material has been disposed of privately by the Missouri Pacific and other roads.

Demand in South Slow

Birmingham, Ala., Dec. 4.—Scrap transactions in the South are rather slow except for deliveries on old contracts and the bringing in of stock by the dealers. Quotations continue weak. Dealers still are firm in conviction that there will be a turn for the better shortly when soil pipe and other foundries and shops begin to feel the new influx of business. The larger melter of heavy melting steel has not made new contracts lately, as far as can be ascertained. Consumers still are masters of the situation. Difficulties of railroad service are on the wane. The price list this week is nominal.

John W. Conway, Hartford, Conn., brass founder, has filed a voluntary petition in bankruptcy with liabilities of $154,659.55 and assets of $6650. The New Haven Iron & Metal Co., New Haven, Conn., is a creditor for $15,472.23.

Farm Outlook Is Improving

Abundant Crops and Rising Prices Feature Agricultural Situation—Many of the Estimated Yields Exceed Last Year—Total Value 34 Per Cent Greater—Washington Plans Credit Aid

BY JOHN W. HILL, FINANCIAL EDITOR

GOOD crop yields and fair prices are prime essentials for good general business. This year most American harvests are abundant and values of agricultural products have been steadily rising in recent months. Of 20 important crops, 16 are larger than they were in 1921, while 11 are above the 5-year average, 1916-1920. Based upon November price quotations and government estimates of yields, the aggregate value of 20 leading crops is 34 per cent higher than in 1921. This should put at least $2,000,000,000 more in the farmer's pocket than last year.

The favorable position of eight important crops is pictured in the Business Trend chart of American Crop Production. While corn is slightly below the bumper yield of last year, the 1922 production stands as one of the large crops. Wheat is slightly above 1921. This is important in view of the world shortage in the wheat crop of 245,000,000 bushels compared with last year.

Much of this reduction in yield is in Europe. That will mean continued good prices for American grain and heavy exports. Despite the financial predicaments of numerous European governments, these countries cannot fail to find the means of buying food for their populations. About 75 per cent of our exports of farm products and raw materials go to Europe. We export 15 per cent of our entire crop value. The recent rise of foreign exchange, as shown in the Business Trend chart, reflects improvement both in the outlook and purchasing power of Europe.

From the low points wheat has advanced over 30 per cent; corn, 50 per cent; cotton, 136 per cent; and hogs, 41 per cent. The most important feature of these increases in value is that they came while farmers were marketing their harvests. Last year's rise appeared after the bulk of the crops had been sold by the producers. Cotton planters are especially fortunate this year. They have had two short crops in succession. This year's profits to them are estimated at $330,000,000 against $60,000,000 last year and next to nothing two years ago.

Although the farmer is getting more for what he sells, the prices of other commodities are rising rapidly also. That is checking the enhancement of his purchasing power. It is slightly better, but is still far below 1913 levels, as indicated by the Business Trend chart on farmers' purchasing power. That fact probably will prevent any runaway buying movement from the agricultural sections.

Reduced purchasing power explains the farmer's discontent. This will be allayed by sustained price strength, better than by any artificial economic aids. However, the new plan of improving credit facilities for the farmer, announced a few days ago by the administration, involves a needed reform. The federal farm loan board will be utilized in carrying out these measures.

The recovery in the stock market last week, after the acute decline, indicated underlying strength. The recent drop was technical in character and without unfavorable business significance.

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The Barometer of Business

WEEKLY COMPARISON

	Last week	Week before	One month ago	One year ago	1913
Business failures	363	436	407	527	308
Cash Ratio Fed. Res. system..	76.4%	76.7%	76.0%	72.7%	.....
Loan rate, 4-6 months, N. Y. (per cent)...	4½-4¾	4½-4¾	4½-4¾	5-5½	5¼-5¾
Aver. 20 Ind'l shares	$90.79	$89.49	$94.51	$75.54	$76.89
Aver. 20 Rail shares	$85.33	$83.15	$90.98	$75.23	$104.11
Aver. 40 bonds	$78.89	$78.38	$80.25	$76.24	$93.00
Car loadings (week ended Nov. 18)....	969,094	953,909	1,003,759	789,000	*889,000
Bank debits 165 cities (000 omitted)	$8,686,489	$9,213,497	$9,665,855	$9,148,068	.....

*1920.

FOREIGN EXCHANGE (Demand)

	Normal	Dec. 2 (close)	Week before	Month ago	Year ago
Sterling	$4.86	$4.53¼	$4.52	$4.45	$4.04
Francs	19.3c	7.02c	7.05½c	6.86c	7.30c
Lira	19.3c	5.01½c	4.79½c	4.20c	4.27c
Marks	23.8c	0.01¼c	0.01⅛c	0.01c	0.46c

MONTHLY COMPARISON

	October	Month before	Year ago	Monthly average 1913
Dodge building awards in 27 states	$253,137,000	$271,493,000	$222,480,000	$71,450,000
Business failures:				
Number	1708	1566	1733	1336
Liabilities	$34,647,438	$36,909,157	$53,059,000	$22,723,000
Excess of exports	†$85,000,000	$31,000,000	$146,490,953	$54,406,006
Excess of gold imports	$3,274,561	$23,065,000	$39,530,367	*$630,716
Bureau of Labor Price Index....	154	153	142	100
Bradstreet's Price Index	144.4	135.3	121	100
Economist's British Price Index..	4264	4189	4588	2717
Cost of Living Index	157.1	155.6	163.7	100
New incorporations	‡$808,719,600	$651,577,390	$367,956,000	$172,301,000
Railroad net earnings	$75,000,000	$58,000,000	$105,400,000	$59,900,000

‡November. †September. *Monthly average export excess.

The Business Trend

December 7, 1922

TRADE TODAY, TOLD BY IRON TRADE REVIEW CHARTS

GENERAL SITUATION—Upturns in numerous financial and commodity markets reflect improvement in sentiment respecting outlook; activities holding up in many lines despite influence of season-industrial labor shortages less acute as outside employment diminishes.

FREIGHT TRAFFIC—All records shattered by November car loadings; total for week ended Nov. 18, of 969,094 shows gain of 180,000 cars over 1921 and 80,000 over 1920.

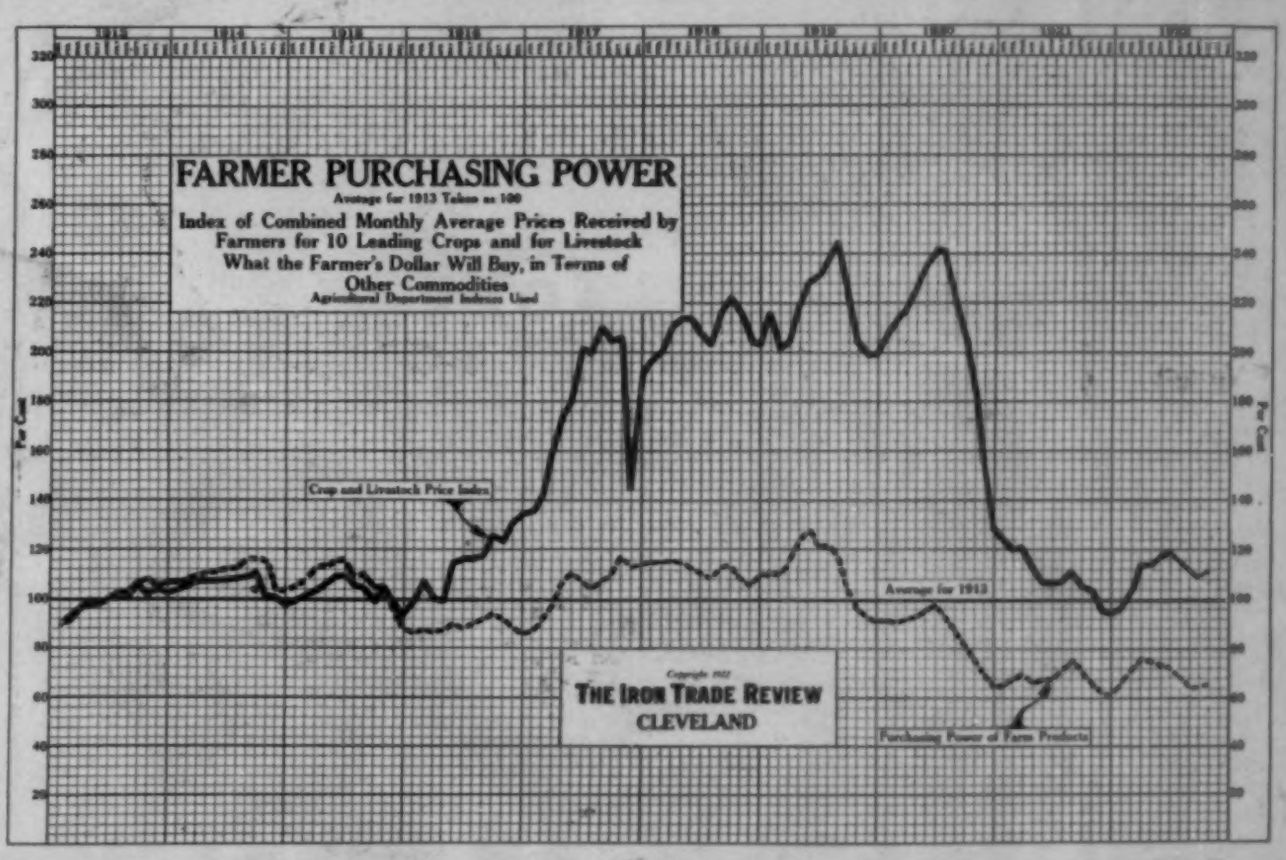
FOREIGN EXCHANGE—Emphatic gains mark foreign exchange markets; Sterling at over $4.52 highest since government support was removed in 1919; francs and lire recover losses; mark low.

SECURITY PRICES—Upturns apparently mark end of drastic share reaction; average for 50 representative stocks down nearly 10 points from high; bonds stronger also.

FARMER PURCHASING POWER—Buying power of farm products only 65 per cent of 1913 level; slight increase over previous month; rising crop prices should improve farmers' position.

CROPS—Of eight leading crops all yields, save cotton, exceed 1909-1913 average; value of important farm products up 34 per cent over 1921.

PRICES AND FAILURES—Bradstreet's price index shows 25 per cent gain over 1921 low point; highest peacetime rise on record; failures 37 per cent below January high.


FARMER PURCHASING POWER
Average for 1913 Taken as 100
Index of Combined Monthly Average Prices Received by Farmers for 10 Leading Crops and for Livestock
What the Farmer's Dollar Will Buy, in Terms of Other Commodities
Agricultural Department Indexes Used
Crop and Livestock Price Index
Average for 1913
Purchasing Power of Farm Products
Per Cent
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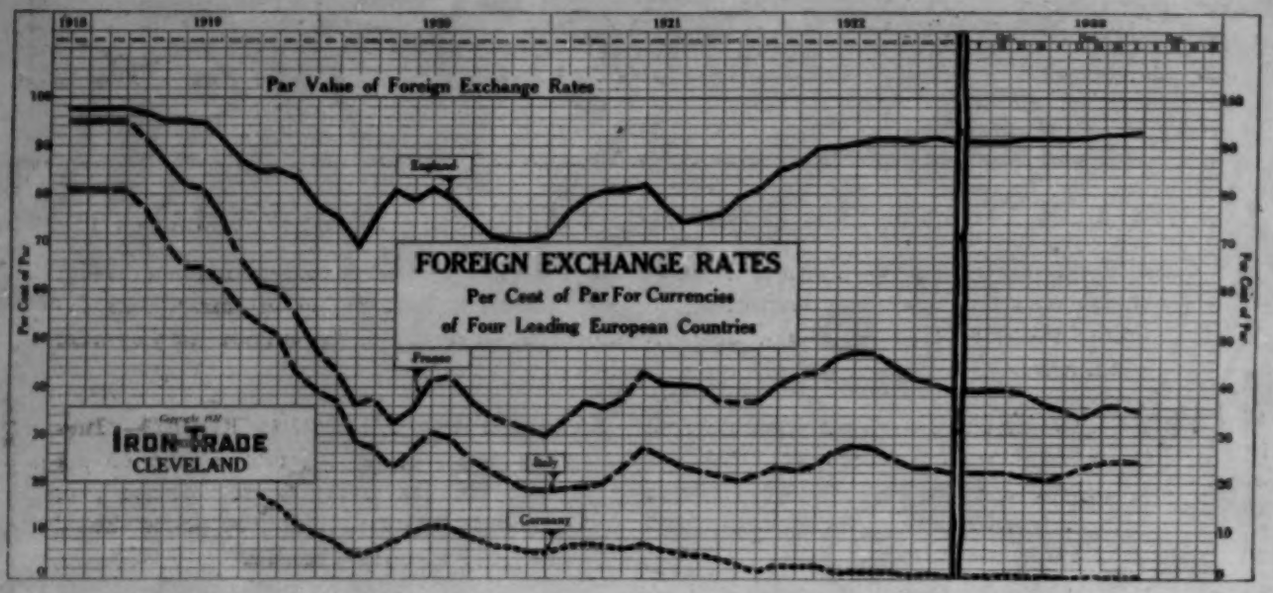
Par Value of Foreign Exchange Rates
England
France
Italy
Germany
FOREIGN EXCHANGE RATES
Per Cent of Par For Currencies
of Four Leading European Countries
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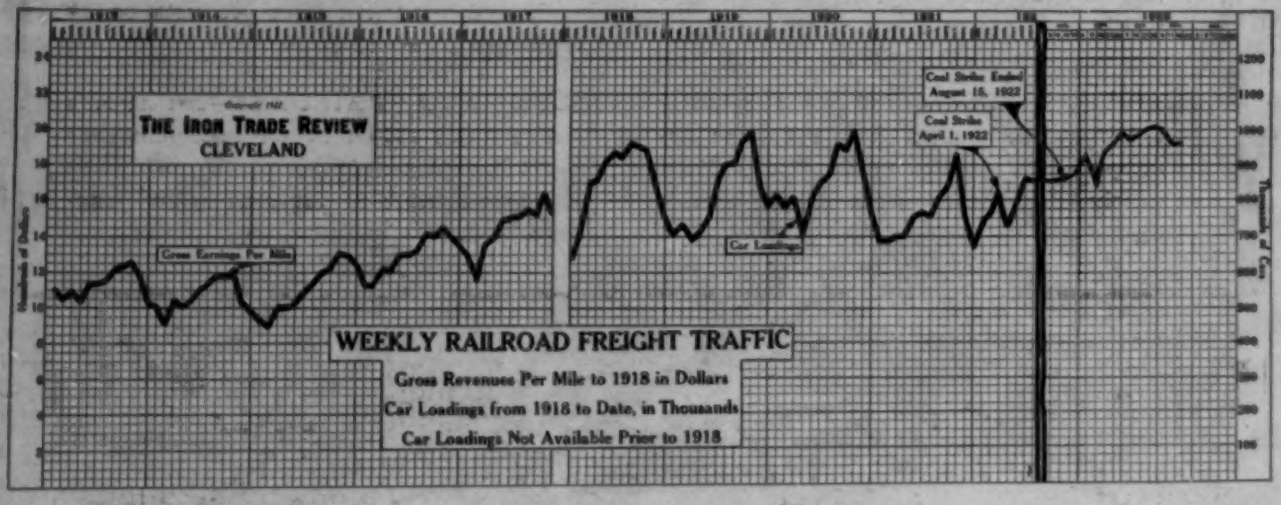
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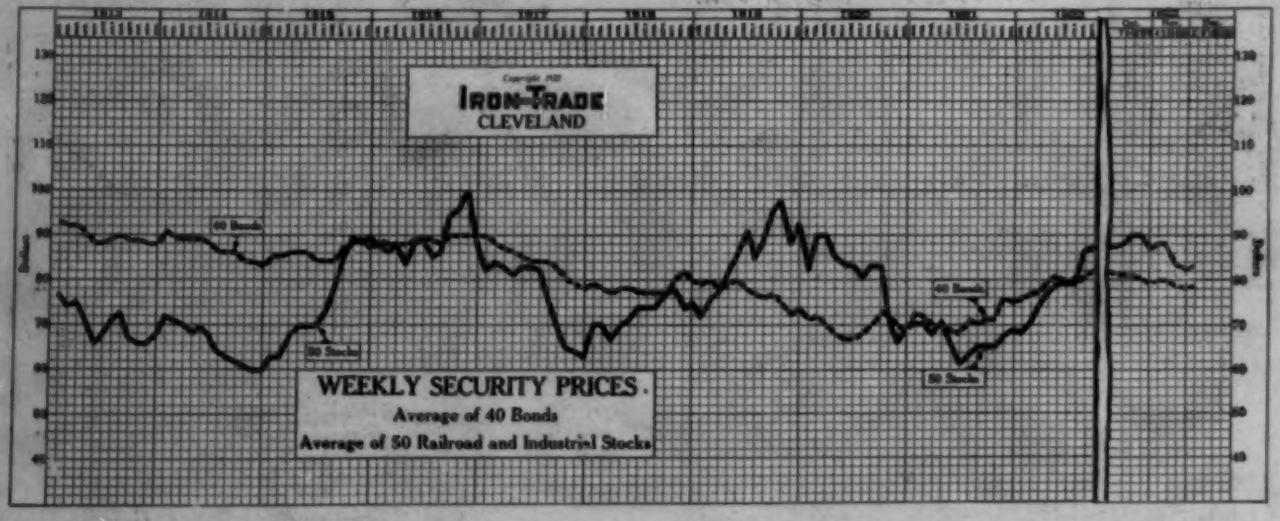
Coal Strike Ended August 15, 1922
Coal Strike April 1, 1922
Gross Earnings Per Mile
Car Loadings
WEEKLY RAILROAD FREIGHT TRAFFIC
Gross Revenues Per Mile to 1918 in Dollars
Car Loadings from 1918 to Date, in Thousands
Car Loadings Not Available Prior to 1918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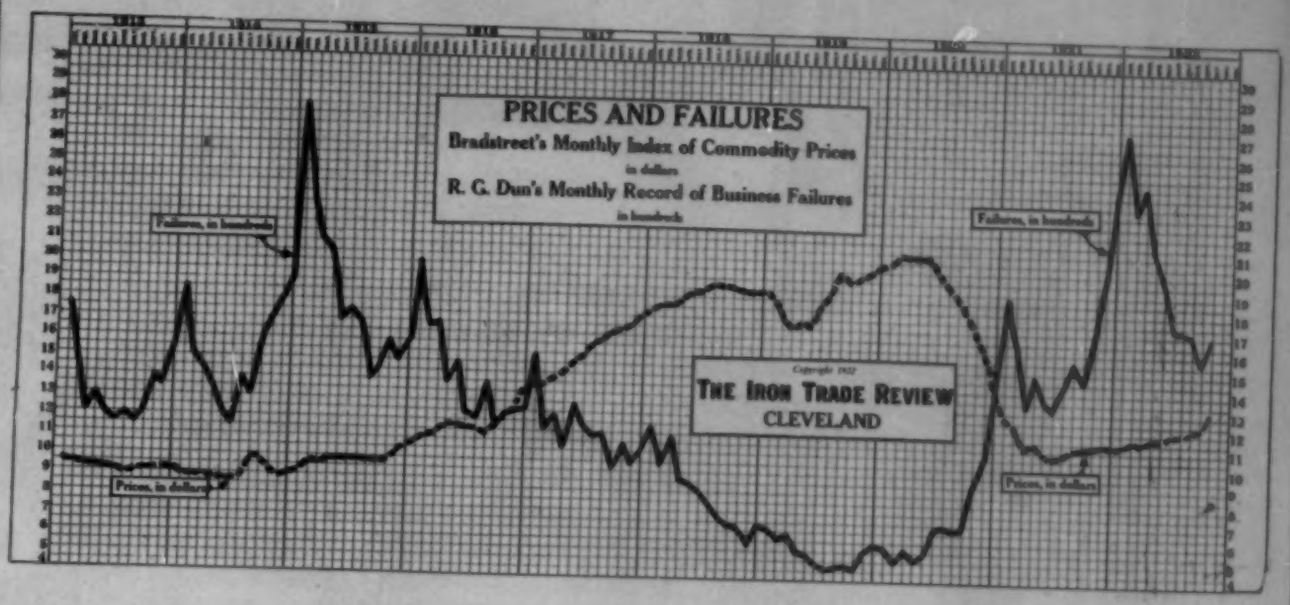
40 Bonds
50 Stocks
WEEKLY SECURITY PRICES
Average of 40 Bonds
Average of 50 Railroad and Industrial Stocks


PRICES AND FAILURES
Bradstreet's Monthly Index of Commodity Prices
in dollars
R. G. Dun's Monthly Record of Business Failures
in hundreds
Failures, in hundreds
Prices, in dollars
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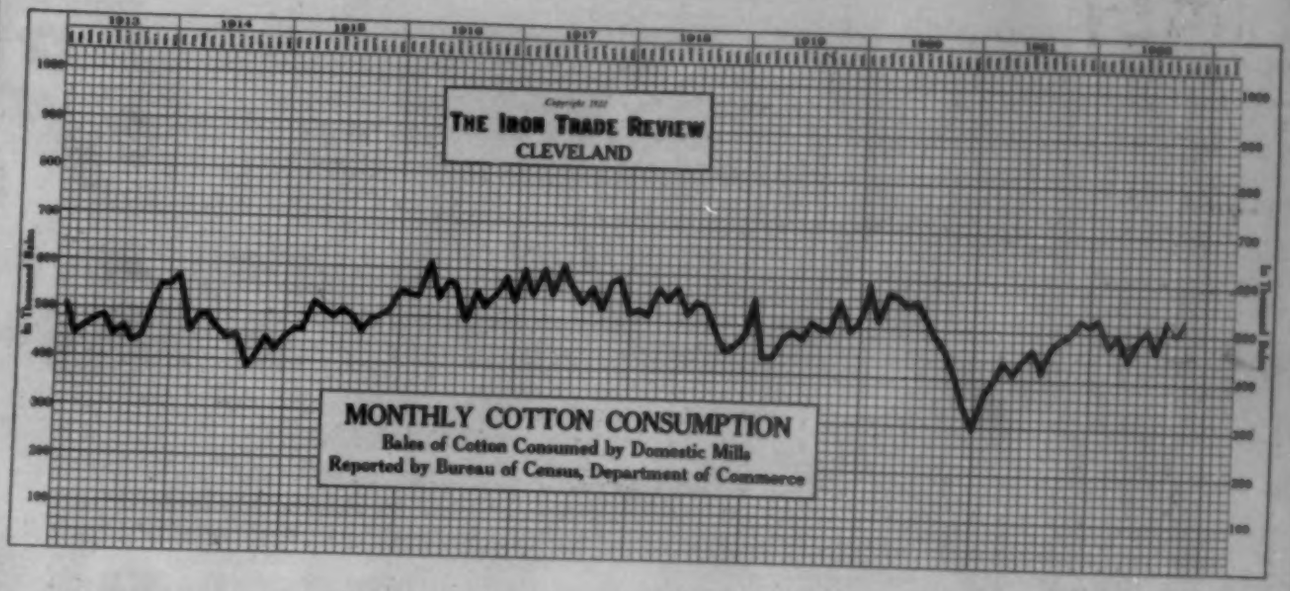
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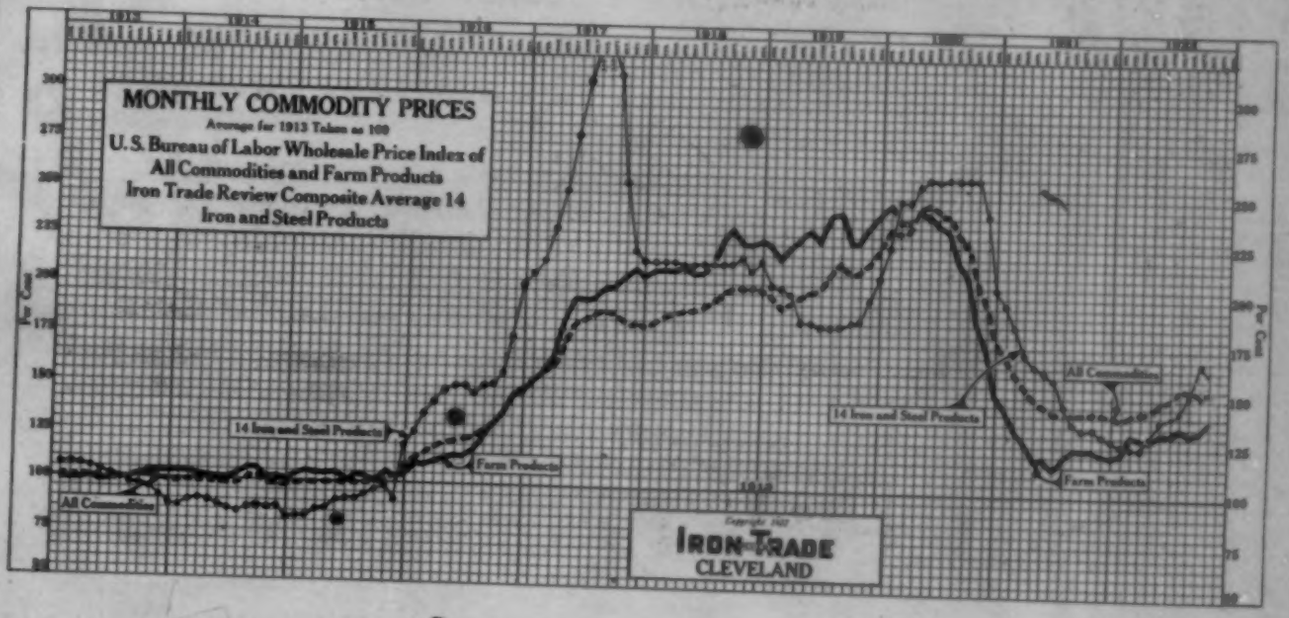
MONTHLY COTTON CONSUMPTION
Bales of Cotton Consumed by Domestic Mills
Reported by Bureau of Census, Department of Commerce


MONTHLY COMMODITY PRICES
Average for 1913 Taken as 100
U. S. Bureau of Labor Wholesale Price Index of
All Commodities and Farm Products
Iron Trade Review Composite Average 14
Iron and Steel Products
14 Iron and Steel Products
Farm Products
All Commodities
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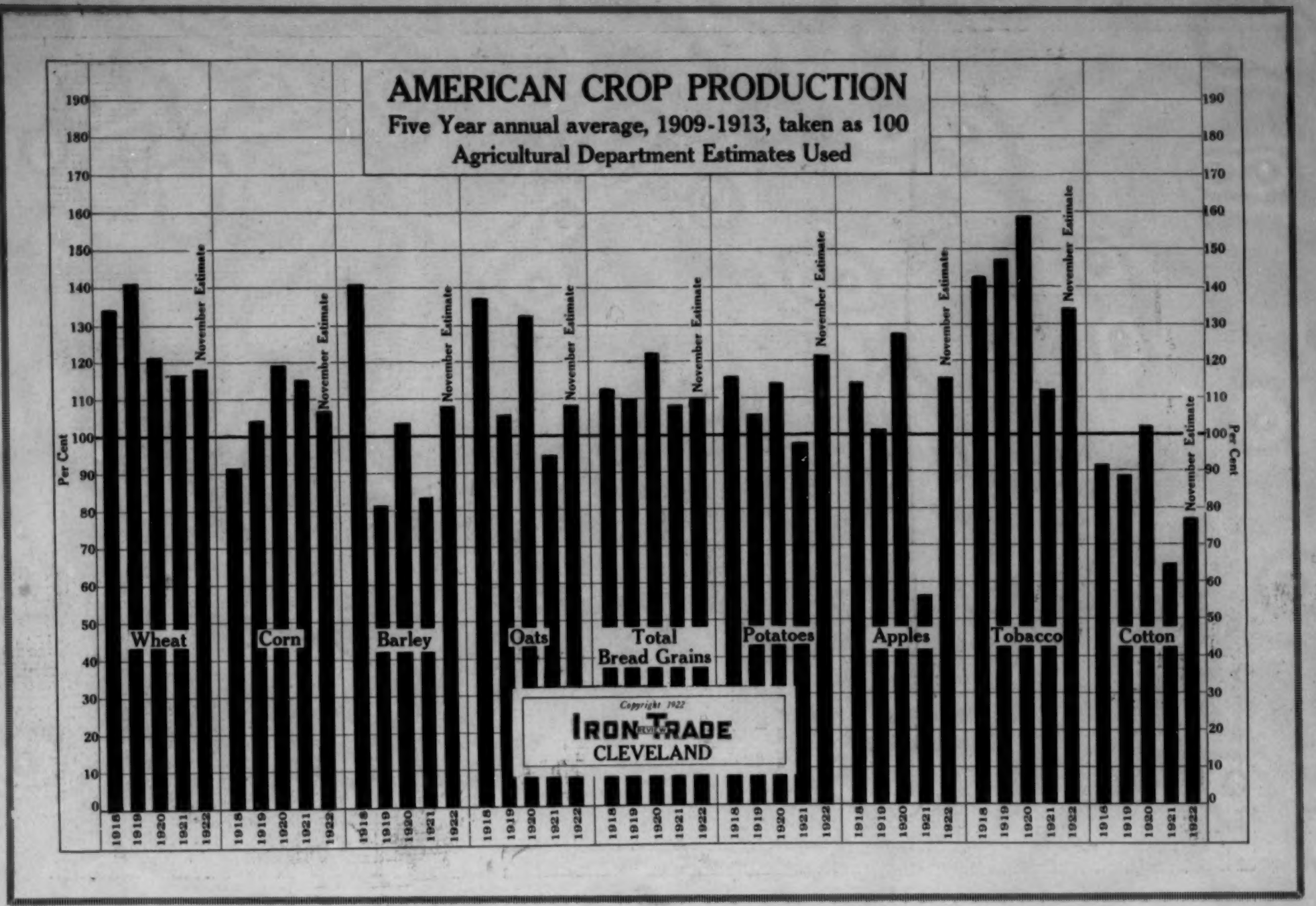
AMERICAN CROP PRODUCTION
Five Year annual average, 1909-1913, taken as 100
Agricultural Department Estimates Used
Per Cent
Per Cent
Wheat
Corn
Barley
Oats
Total Bread Grains
Potatoes
Apples
Tobacco
Cotton
November Estimate
1918
1919
1920
1921
1922
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Converter Produces Better Steel

Attention To Melting and Blowing Adds To Quality of the Metal—Cupola Operations Different from Those in Gray Iron Melting—Ferromanganese and Ferrosilicon the Principal Deoxidizers—Aluminum Is Not Essential

BY RALPH BURKE

THE past few years have seen the small converter fall more and more into disrepute for the making of steel castings. The standard of melting scrap was lowered during the war, making it increasingly difficult to obtain low-phosphorus and low-sulphur stock, and at the same time good coke was hard to obtain. Coupled with the tendency of most foundries to increase the percentage of scrap in the charge with the rise in price of low-phosphorus pig iron the result has been a poor grade of steel, with accompanying shrinks, cracks, and kindred ailments. However, the converter is in a class by itself for flexibility and versatility. For this reason many of the converter shops have retained their converters, improved their melting practices, and modified their molding operations, with the result that they are again in a position to produce satisfactory steel castings.

Starting from the melting end of the foundry, the first aim of the melter is to eliminate the factors causing excessive shrinkage or excessive red shortness of the steel. It generally is recognized that sulphur is one of the detrimental elements, causing red shortness, and that phosphorus in excess has a tendency to cause excessive shrinkage, while making the steel set quickly in the mold and thus preventing the risers from properly feeding the casting. Satisfactory steel may be produced with high sulphur, or with high phosphorus, but never when both elements are present in excess. While no definite figures are obtainable, most converter men who have experimented along these lines agree that a combination of these elements above 0.14 per cent is unsafe. It has always been the easiest way to lay all cracking and shrinkage trouble to high sulphur and phosphorus, in spite of the fact that any given pattern will sometimes come out better when poured with inferior steel than when poured of steel of good analysis, molding and pouring conditions being held the same. This indicates that a third detrimental element is at work, not so easily measured or controlled. This element is found in the oxidation of the steel, either in the cupola or in the converter. Therefore, any improvements to be made for quality of the steel must be by reducing sulphur, phosphorus, and oxidation.

Phosphorus is the element most easily controlled, since the phosphorus content remains practically constant from the charging platform to the casting, with allowance for the concentration due to melting and blowing iron losses. Evidently the only way to get low-phosphorus castings is to buy low-phosphorus pig and scrap. For foundries melting a large percentage of scrap the upper limit for phosphorus should be 0.04 per cent.

The combined cupola and converter loss will vary somewhat, according to the mixture blown, size of vessel, and temperature of metal, but a fair average will be about 13 per cent, allowing 10 per cent for blowing and 3 per cent for melting loss. Thus, if the phosphorus content is 0.04 per cent as charged into the cupola, we will carry the same weight of phosphorus throughout the melting and blowing operations. This constant weight is a larger proportion of the diminished final weight of the charge, or 0.046 per cent. This figure is obtained by dividing the original phosphorus content by the percentage of metal remaining after subtracting the metal loss. In this case 0.04 would be divided by 0.087, giving 0.046 per cent phosphorus in the steel.

Sulphur is an element not so easily controlled. Only the best possible low-sulphur coke should be used. Beside keeping the sulphur contents low the use of the best grade of coke generally will result in a saving on account of giving a better fuel ratio. By improper cupola operation a good grade of scrap may be rendered unfit for casting purposes through excessive sulphur absorption. In general, thin sections of scrap will absorb more sulphur than heavier sections, indicating that plate scrap, flashings, etc., should be avoided. At the same time exceedingly heavy sections require longer contact with the coke before melting, thereby absorbing an excess of sulphur. Scrap should be carefully chosen with a fairly heavy, uniform section. Pig iron should be specified high in manganese, so that the total manganese content in the charge will be about 1 per cent. Also ferromanganese may be used for keeping up the manganese content of the charge. A manganese content over 1 per cent is detrimental to the converter lining.

In blowing converter steel, the increase in temperature of the metal from the original heat of the cupola to the final pouring temperature depends largely on the silicon and carbon contents of the charge, these elements simply acting as fuel when combined with the air from the blast. Since the carbon contents must be more or less as we find it, depending on the amount of pig iron used in the mixture, the temperature variation is obtained by varying the silicon contents. For large work it is not necessary to carry a high temperature, nor is it advisable, as the hotter the steel the more difficulty is experienced in cleaning the sand from the casting. For small work the steel must, of course, be hot as possible, in order to run the casting, and also for the reason that small work

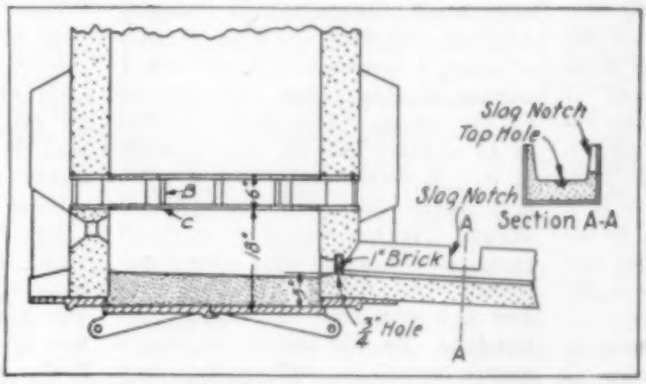


FIG. 1—THE CUPOLA USED TO MELT METAL FOR THE CONVERTER IS DIFFERENT FROM THAT USED FOR MELTING IRON FOR CASTINGS—NOTE THE LOW TUYERES

is usually poured from small shank ladles, and is generally handled twice before being poured into the mold.

The correct silicon content for satisfactory blowing will vary between wide limits, depending on the weight of the castings to be poured, the method of pouring, and the temperature of the cupola iron. For extremely small work, poured mainly with shank ladles, a silicon content of about 2.0 per cent generally will be found satisfactory. The same results will be obtained, with faster blowing, by melting the iron at 1.0 per cent silicon and adding enough 50 per cent ferrosilicon to the vessel during the blow to bring the total to about 2.0 per cent. For heavier work, poured with lip or tea-pot ladles, about 1.25 per cent silicon will be found to give good results, and for bottom-pouring ladles about 1.0 per cent is sufficient.

It will be found that the freedom of the steel from excessive oxidation is just as important in running thin sections as the temperature of the metal. No matter how hot the metal may be originally, if it is full of oxides it will chill rapidly when exposed to the air or a cold surface. On the other hand, metal free from oxides will run when surprisingly cold, and seems to pour better the longer it stands. The ladles in any case must be as hot as it is possible to get them, especially for lip pouring.

The cupola operation generally is the determining factor in quality of the steel. Practices that produce satisfactory gray iron are not at all suitable for the steel foundry, especially those melting a high percentage of scrap. In general, the cupola described and operated as shown in this article has given the best results for economy, elimination of oxidation, and low sulphur absorption. The low fuel bed and high fuel ratio make for economy, and since the cupola runs with the tap hole open the molten iron is only momentarily in contact with the fuel bed. This together with the high fuel ratio, minimizes the sulphur absorption. At the same time the absence of flux is a direct saving in itself, and an indirect saving in the life of the cupola lining.

Referring to Fig. 1, it may be seen that the tuyeres, instead of being the usual separate openings, are made of two cast iron rings, in segments, separated by iron spacers, *B*. This allows a large volume of air to pass with low blast pressure, decreasing oxidation, and bringing down hot iron. With these tuyeres only short blue flames appear at the charging door when melting. A blast pressure of about 5 ounces is carried, with a volume of about 3500 cubic feet of air per minute. The cupola is lined to 42 inches. The tap hole is made ¾ inch in diameter by filing a notch in a 1-inch brick and placing it as shown. The tap hole is never closed except for the few minutes when transferring iron to the converter, and both iron and slag leave the cupola from this hole. To take care of the slag, a narrow trough is made in the spout for the iron and a firebrick is laid over this trough. The brick allows the iron to run under it, but cuts off the slag, deflecting it over a notch cut in the side of the spout as shown. Since no limestone is used, the slag becomes pasty as soon as it strikes the air and is easily handled, but by being in contact with the hot iron remains fluid enough to clear the cupola and run freely from the hole. As soon as the ladle is filled the blast is shut off, the tap hole stopped off, and any slag cleaned away from the spout ready for the next tap. This cupola delivers hot iron with no less than an 8 to 1 coke ratio.

The reason for shutting off the blast between taps under this method of cupola operation is to prevent any molten iron from remaining in contact with the coke bed, and to give the cupola tender opportunity to prepare his spout and remove slag from the runner. The time between taps should be as short as possible, and generally 3 or 4 minutes should be enough to empty the ladle into the converter and return it to the cupola. In ordinary cupola practice, the blast, of course, should be kept on as continuously as possible, and is generally regulated according to the requirements of the converter.

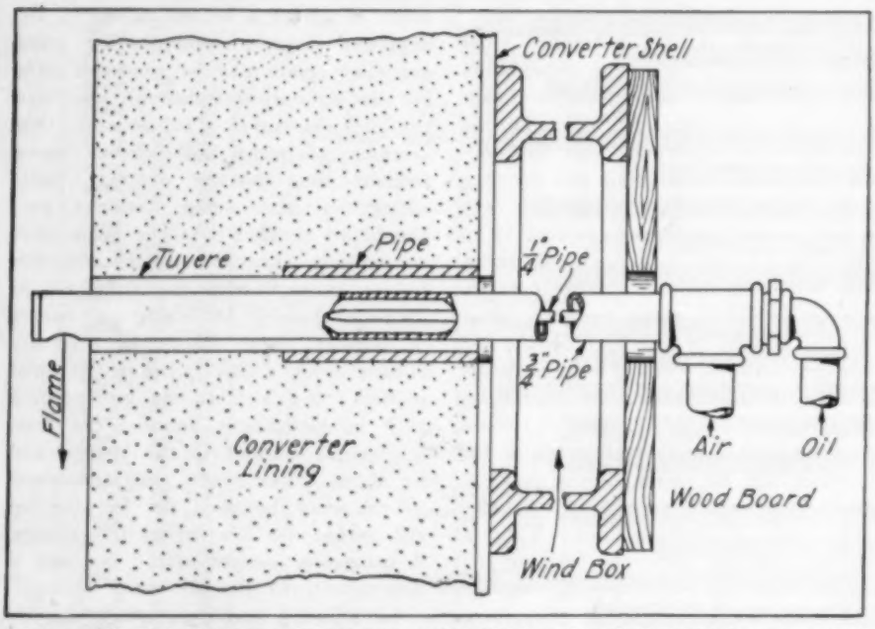


FIG. 2—AN OIL BURNER INSERTED THROUGH A TUYERE SERVES TO HEAT THE CONVERTER PREPARATORY TO BLOWING STEEL

High Grade Refractories

The converter, while simplicity itself, requires a great deal of minute attention, especially as to proper lining. Only the best of refractories should be used, as with poor material the vessel soon becomes distorted as to shape, making irregular blowing, and the heavy slag produced by the melting lining causes no end of trouble in pouring and with the ladles. The tuyeres require careful attention to insure that all the blast goes through them, instead of partly between the lining and the shell to seep through the lining in another place and cause bad blows. Ganister is generally favored over brick for this reason, although good results can be obtained with both kinds of lining.

The converter should always be clean of slag, the tuyeres as level as possible and the vessel at least at a good orange heat before putting in the first iron. An oil burner is perhaps the best method of heating a converter, being clean, fast, economical and positive.

Fig. 2 represents a section of converter through a tuyere. The tuyere is shown made half its length of common pipe, tight against corresponding hole in the shell, to prevent air leaks behind the lining. At the same time these pipes once set level, form a guide for patching the tuyeres. The burner

(Concluded on Page 1563)

Operating Oxyacetylene Apparatus

Safety Is Obtained Only by Strict Observance of Rules Governing Care of the Equipment—Acetylene Generators Require Skilled Operators—Storage of Carbide and Tanks Must Be Done Carefully

BY H. S. SMITH

AS MATTERS now stand the record of the oxyacetylene industry is a good one and the number of accidents that occur are infinitestimal considering the exceedingly rapid growth of the process and the enormous extent to which it is now employed. It is impossible today to cite a single industry in some of the ramifications of which oxyacetylene welding is not employed.

Some serious accidents have occurred in which oxyacetylene has been involved, but in practically every case such accidents would have been avoided if common sense had been used and if the recommendations made by the National Safety council in its "Safe Practices" pamphlet No. 23 had been followed. No better advice or recommendations can be given than those outlined in this pamphlet. All foremen and all welders should have copies of this pamphlet in their possession, and should be given to understand the importance of carefully reading it and following the instructions in their daily work. Executives should make a point of reading and digesting this bulletin so that when going through their plants they may make observations as to the welding work going on and be in a position to judge whether safe practices are being followed. One of the troubles the oxyacetylene industry has had to contend with in the past has been that the heads of the establishments have not appreciated the importance of their welding work; consequently, they have not personally taken the trouble to learn much about it, but have left it entirely in the hands of subordinates, without first assuring themselves that the subordinates delegated to look after the work knew sufficient about it, and without making sure that the right sort of equipment was being employed, properly installed and safely operated.

Purchasing the Equipment

In purchasing oxyacetylene equipment the purchasing agent should specify acetylene generators, blowpipes, regulators and other apparatus in strict conformance with such types as are officially recognized and approved in the list of inspected mechanical appliances published by the Underwriters laboratories of Chicago. Likewise, when he is purchasing supplies of oxygen and acetylene in cylinders, he should call for the gases to be supplied in cylinders that are manufactured according to the specifications of the interstate commerce commission and marked as signifying that they so comply. The purchase specifications for calcium carbide, from which the acetylene is made, should call for the drums or packages to be made of metal, of sufficient strength to enable them to be handled without rupture, and should call for the drums to be provided with a screw top or its equivalent.

Having purchased the necessary equipment and supplies, it is necessary that the supplies be stored properly and the equipment properly installed. In this connection two points should be observed carefully when first adopting the welding process: First, secure a copy of the rules of the National Board of Fire Underwriters covering the installation and operation of acetylene equipment and make sure that these rules are followed when the plant is installed. This will give assurance of employing the best practice that is known today. Second, follow closely the instructions which are supplied by the manufacturers of the acetylene generator or other equipment to be installed.

Storing Carbide Supplies

Certain cities and municipalities have regulations prescribing where and how and how much calcium carbide, compressed acetylene and compressed oxygen shall be stored and when such is the case a copy of the local regulations should be secured and followed closely. As a matter of fact, it will be found generally that these local regulations are almost identical with the regulations of the National Board of Fire Underwriters.

Calcium carbide does not constitute a fire hazard, but when brought in contact with water, acetylene is generated, and acetylene is an inflammable gas. Therefore, calcium carbide should be stored only in dry and well-ventilated places. Many users store calcium carbide in the same building or compartment in which the acetylene generator is housed. When the calcium carbide is stored in the same compartment with the acetylene generator the carbide should be placed on a platform at least 6 inches higher than the main floor level, so as to keep the drums clear of any water that might get on the floor when the generator is being flushed or when the floor is being washed. It is always essential to see that drums, the contents of which have been partly used, have their screw cover put back after a part of the carbide has been removed from the drum. Otherwise moist air will attack the carbide in the open drum and generate acetylene gas which might ac-

Accidents Are Reduced by Education

ONE of the few commonly voiced objections to the oxyacetylene method of welding and cutting is its liability to explosions and the attending dangers to workmen. Gas welding is a comparatively young industry with a remarkably rapid growth, yet statistics bear out the statement that relatively few accidents have occurred and, in most cases, these were attributable to some carelessness on the part of operators. Education and training in safety measures has been responsible for holding accidents down to a minimum. In the May 19, 1921 issue of IRON TRADE REVIEW *was the report of an exhaustive series of experiments conducted by the bureau of standards to determine the best practice with blowtorches. Some data was given concerning the best gas and air ratios and operating pressures. In the present article, a paper which was presented at the recent meeting of the National Safety council in Detroit, the author discusses safe practices in oxyacetylene welding, confining his attention to generators, storage of calcium carbide, gas and air tanks, and methods of making connections, rather than to the technique of the welding process. Executives and operating heads of plants employing the acetylene process of welding will find much timely and valuable information in this article. The author, H. S. Smith, is with the Prest-O-Lite Co., New York.*

cumulate in the premises with danger.

Whether calcium carbide is stored in a separate building or in an acetylene generator house, the location should be illuminated only with incandescent electric lights, which should be guarded properly so as to prevent the globes from being broken by accident; all switches should be outside the building, as should other spark-emitting devices, including the telephone. In cases where calcium carbide is stored in large quantities, and a separate building or compartment is used for this purpose only, it is desirable, where feasible, to have the floor of the building level with the floors of railway cars and trucks. This will facilitate unloading and prevent a certain amount of damage being done to the drums, which frequently occurs through rough handling when the drums have to be lowered to the ground from a car or truck. When unloading calcium carbide, received from the shipper, any drum that has been damaged in transit to the extent that a hole has been made in it should be set to one side for immediate use, or the contents should be transferred to another package. This would show that it is desirable to keep on hand a few empty packages for such emergency use.

Handling Gas and Air Cylinders

It is bad practice to have cylinders of compressed oxygen and compressed acetylene stored and located indiscriminately around the premises. Where compressed gases are used it is necessary to have a cylinder of oxygen and a cylinder of acetylene at each point where the welding work is being carried on, but cylinders on hand in excess of those in actual use should be properly and methodically stored. It is considered good practice to store acetylene cylinders in the room or building employed also for the storage of calcium carbide, but the storage space should be used for no other purpose except the storing of calcium carbide and cylinders of compressed acetylene. If the room or location in which the acetylene cylinders are stored is heated artificially the cylinders should not be located close to the regulators. It will be noted that there is no need to heat the locations in which calcium carbide or compressed acetylene are stored. Acetylene cylinders, when being unloaded for storage, should be handled carefully. In the case of carbide it is desirable, where possible, to have at the warehouse in which the acetylene is to be stored, the floor level with car and truck floors, but naturally this is only possible in establishments having their own car sidings.

Workmen employed in unloading cylinders of acetylene for storage must exercise care in lowering the cylinders from the truck or car to the ground. Workmen get careless on this job and it frequently occurs that cylinders are dropped from the truck or car floors to the ground, sometimes onto concrete. The cylinders are strong and will stand an enormous amount of abuse, but it should be appreciated that they have pressure in them and that there are of necessity safety fittings which project from the surfaces of the cylinders. Many acetylene cylinders have fuse plugs located in their bottoms. These plugs are protected by a band, which prevents their striking or coming in contact with the floor when the cylinder is properly and sanely handled; but, nevertheless, they can be damaged if the cylinder is dropped from a height, so as to cause the protecting band to be driven off the shell, or if it is dropped onto a rough surface. If one of the fuse plugs is broken off or loosened, gas will escape from the cylinders and may be ignited.

Oxygen cylinders can be stored safely and properly in the regular plant stock or supply rooms. However, they should not be stored close to radiators or adjacent to combustible material. Above all things, be sure that they are not stored adjacent to oil or grease. If a warehouse is provided for the storage of oxygen, compressed acetylene and calcium carbide, the calcium carbide and acetylene may be properly stored in the same compartment, but oxygen should never be stored in the same compartment that acetylene is stored in.

Danger From Fire

Supposing a fire should break out in the building, the fuse plugs in the acetylene cylinders would melt at a comparatively low temperature, would release the gas from the cylinders, and the acetylene would be ignited. The heat from the burning acetylene would cause the pressure of the oxygen cylinders to increase and build up to a point where the frangible bursting disks, which are generally employed as the safety devices in oxygen cylinders, would be released, with the result that oxygen also would escape. You can imagine what a terrific heat and blaze there would be with thousands of cubic feet of acetylene combining with pure oxygen in the same room.

There is one of three things to do with the acetylene generator—it can be housed in a separate building, away from other buildings; it can be housed in a lean-to building or shed adjoining the plant; or it can be installed inside one of the plant buildings. A separate, isolated gas house is the ideal method, especially so if you go to the expense of having a substantial structure with floors at truck-floor level and divide the building into three or four compartments, using one section for housing the acetylene generator, one or two sections for the housing of calcium carbide and acetylene cylinders, and another section for the storage of oxygen cylinders. The isolated generator, carbide and gas storage warehouse need not necessarily be of fireproof construction, although such construction is preferable. In the case where it is decided to house the acetylene generator in a building which is a lean-to to the main plant, it should be separated from such plant building by an unpierced fire wall.

Where it is decided to house the generator inside one of the plant buildings it is important to be sure that insurance companies do not object, and also to see that some local ordinance is not being violated. However, if such is not the case and the generator is housed inside, a special compartment or room must be constructed, and this compartment should be built of noncombustible material. The door to the compartment preferably should open to the outside, but if it does open into the main building or shop the door should be of the fire, self-closing type. It is far more desirable to have the door open to the outside; then, if there is any leak of gas, there is no chance for the gas to escape through the door into the main building or shop, with the possibility of being ignited.

The author is of the opinion that acetylene generators should not be installed inside buildings where the building is more than one story in height, except in the case of a special generator house provided with two floors, when the second floor is sometimes used for the storage of a supply of carbide and for charging the generator. The generator should stand on a substantial and firm foundation. Cases have been known where generators were put up on a flimsy foundation, which were later undermined by the water discharged from the generator and, as a result, the generators canted over and broke off certain piping connections, causing serious trouble.

Locating Electric Switches

A generator room must be protected from freezing. This is most important. Freezing up of acetylene generators is the cause of 50 per cent of the accidents that have happened with them. One should never attempt to lower the freezing point of the water by using calcium chloride in an attempt to do away with the necessity of heating, for the reason that the calcium chloride not only tends to corrode the generator itself, but gradually will permeate the whole piping system and cause trouble.

Generator houses should be provided with plenty of daylight illumination and plenty of head room. Necessarily it must be well ventilated and also be provided with good and sufficient artificial illumination. This must necessarily be of the incandescent electric type, with globes properly protected and with switches outside the building. Certain existing rules call for acetylene generators to be charged during daylight hours only, but such rules are today obsolete and cannot be complied with for the reason that many generators are in constant use, and during the winter months it is necessary to charge in other than daylight hours. For this reason it is essential that the artificial illumination be good.

One would think today that any workman who could get a job would be educated sufficiently to know that you can't bring a naked flame in contact with a combustible gas without getting ignition or explosion, yet a considerable percentage of the accidents that have occurred with acetylene generators have been caused by this. It is for this reason that the author strongly recommends good natural and artificial illumination in the generator house, so that there will be no possible inducement for the thoughtless workman to strike a match or use a lantern when examining the generator. The instructions furnished by the manufacturers of acetylene generators for the installation of their machines should be followed closely and it is advisable, when at all possible, to have the manufacturer install the machine and put it in operation.

Installation of Piping

It is unnecessary to say anything about the installation of acetylene gas piping except that it should be of ample size to meet the estimated maximum demand and should be installed according to the requirements of the National Board of Underwriters. It should be appreciated that National Board rules are recommended and drawn up by the National Fire Protection association, a body that always has made a point of consulting with the industry when preparing rules. Possibly it can be said that National Board rules are the rules recommended by the acetylene industry. You will find in the National Board installation code, rules calling for escape and relief pipes to be carried outside of buildings. The writer has inspected numerous installations where no attention was paid to this rule and safety devices, if they were called upon to operate, discharged their gas inside of the buildings. This was asking for trouble.

A considerable number of the acetylene generators in use today for supplying gas to shop piping systems deliver the gas to the piping system at pressures up to 15 pounds per square inch. It is necessary, therefore, to have the piping systems tested after installation at a good deal higher pressure than is commonly employed for testing out city gas piping systems. Let us now deal with the installation of the oxygen supply: In the majority of cases oxygen is used direct from a standard oxygen cylinder, a separate cylinder being used for each welding station or blowpipe in use. In some instances, however, a number of oxygen cylinders are manifolded together, the gas being supplied to the shops through a system of piping. In rare cases oxygen is manufactured on the premises, the gas being first collected in a gas holder and then compressed in a receiver to a pressure of a few hundred pounds, after which it is passed through a regulator and supplied to the welding stations through a system of shop piping.

Manifolding Oxygen Cylinders

In systems where it is desired to manifold a number of oxygen cylinders and supply gas to welding stations, it is extremely desirable that the necessary manifolds be purchased from a responsible apparatus manufacturer or be made up to their specifications. Every care possible must be taken with the installation of the oxygen piping system. It should be appreciated that oxygen, when supplied in cylinders, is under a pressure of approximately 2000 pounds per square inch and, consequently, oxygen manifolds must be sufficiently strong to withstand this pressure. It must be borne in mind also that no combustible material should be employed in making up the manifolds, for the reason that oxygen under pressure is liable to cause a spontaneous combustion of such material.

When assembling the manifolds and the piping system, great care must be taken to see that fittings, etc., are handled with clean hands. Grease on a joint or in the interior of the piping might cause serious trouble. The interior of the piping must be clear of all scale and rust, and should be washed out thoroughly with caustic soda before being put in service. The actual setting up of welding apparatuses should be followed to the letter.

In those installations where both gases, oxygen and acetylene are supplied from a single cylinder of each gas, the cylinders should be so located that they cannot be knocked over or struck by passing traffic. In most cases, where the individual cylinders are employed, it is the best practice to have both cylinders mounted on a truck, so that they can be transported around conveniently.

When starting up an acetylene generator the first time, the instructions of the manufacturer must be followed in detail. Where possible it is extremely desirable that the acetylene generator manufacturer should not only install the machine but should put it in operation for the first time.

After the generator is charged with water and carbide a connection should be made at the extreme end of the piping system, so that the gas can be discharged from that point to the open air. It is most important, before starting to use the gas for welding, to make sure that all air has been purged from the generator and the piping system. Some common sense has to be used to judge when this has been accomplished, but in the average installation the decomposition of 10 to 15 pounds of carbide will have generated sufficient gas to expel all air from the generator and pipe lines.

Under normal and proper working conditions, the pressure of the acetylene gas in the pipe lines and generator will never exceed 15 pounds per square inch. Pure acetylene gas, that is, acetylene without any air mixture, at any pressure below 15 pounds per square inch is nonexplosive. It is possible to fill an empty cylinder with pure acetylene at a pressure of 15 pounds per square inch, fit the cylinder with a spark plug and make a spark and there will be absolutely no ignition of the acetylene, but if there is a small percentage of air present there will be a violent explosion.

If the same cylinder were filled with acetylene at 30 pounds pressure, and there was no air present and the spark plug was sparked, there would be a violent explosion. The action of acetylene under pressure between 15 and 30 pounds per square inch is somewhat uncertain, but the best authorities have decided definitely that acetylene should never be used in a free state at a pressure in excess of 15 pounds per square inch.

Danger From Backfiring

Let us assume that you failed to purge the pipe lines of air, or mixtures of air and acetylene, and were to light a blowpipe that is supplied with gas from the pipe line, and then suppose that the blowpipe backfired—it would be possible for the backfire to propagate right through the piping system up to the flashback or hydraulic seal, which is necessarily attached to the discharge outlet of all generators. This backfire along the piping system might be of sufficient violence to split the pipe or loosen the joints. The author has known cases where, while the generator was being purged, a cap at the end of the piping system has been removed and a match

applied, under the idea that as soon as the discharge from the pipe would ignite it would show that all air had been driven out of the pipe. In such cases, of course, an accident has generally occurred, the mixture of gas and air discharging from the pipe having ignited, and owing to the orifice being large and the velocity of the gas and air comparatively low, ignition has propagated throughout the piping system.

Ignorance May Cause Explosion

It is desirable always to have two workmen trained to operate the acetylene generator. If only one man knows how to operate the generator, and he should be sick or absent from some other cause, a man who knows absolutely nothing about the operation of the generator probably will be permitted to attend to it, possibly with serious results. The chances are that the foreman doesn't know enough about the generator to tell an unskilled man how to operate it or to judge whether he is operating it properly.

In the recharging of acetylene generators, it is most important to follow the orders and instructions for consecutive operations as laid down by the manufacturer. Manufacturers of acetylene generators have endeavored, as far as seems humanly possible, to make their generators foolproof, but the idea has never been quite accomplished. It is most important to remember, when an acetylene generator is recharged, that the generating chamber which contains the water and spent carbide is first of all drained or flushed out and again filled with water before any attempt is made to open or fill the hopper or container with carbide.

Supposing all the water has been drained from the generating or water chamber, and that before refilling it with water, you fill the carbide hopper, there is just the possibility that a piece of carbide may drop down through the feeding mechanism into the empty generating chamber. It must be remembered that the bottom of this generating chamber will probably have a coating of moist lime sludge. The moisture will attack the carbide and start to decompose. There is, however, not sufficient water to cause the decomposition to take place rapidly, and, as a result, the decomposing carbide may heat up and reach a temperature where it is possible for it to ignite a mixture of acetylene and air. If the carbide hopper were opened up before the generating chamber was filled with water, it would be possible for some air to have gotten into it.

Special attention always should be given to making sure that the hydraulic seals and backflash devices at the discharge of the generator are properly filled with water and are in proper working order. The pressure relief valves, which are commonly employed on what is known as the medium pressure type of generator, should be tested periodically, to see that they are working freely and release at the proper pressure.

If any repairs have to be made to an acetylene generator, the whole machine should be flooded with water thoroughly to make sure that all gas has been expelled. This may seem elementary advice, but history seems to warrant it being given as often as possible, and notwithstanding the fact that this advice is given on every possible occasion, workmen occasionally will open up an acetylene generator to make some minor repair or adjustment, and then, without making sure that all gas has been expelled, start to use some metal tool and create the spark necessary to cause trouble.

In those cases where the shops are piped for oxygen supply, and the oxygen is supplied from a number of cylinders manifolded together, probably it will be arranged for the same man who looks after the acetylene generator to look after the oxygen manifold and replace the exhausted cylinders with full ones when necessary. It is essential that the workman looking after this work be carefully instructed in the matter of handling the cylinders with his hands free of grease or oil. When the empty cylinders are disconnected from the manifold and put on one side, the full ones that are to be attached should all have their valves cracked, that is to say, they should be opened slightly for a moment, to blow out any dirt or foreign matter that may have accumulated in the valve orifices during transport or storage. The cylinders should then be connected up through flexible connections to the manifold, and the valve on one cylinder opened up, care being taken to open the valve slowly so as not to throw a pressure of 2000 pounds suddenly on the system. With the valve of one cylinder opened up, the manifold and all connections will contain oxygen at 2000 pounds pressure per square inch.

Inspecting For Leaks

A careful search should then be made for leaks, which will be detected by a hissing sound. Connections where leaks occur should be tightened up immediately. After the operator has made sure there are no leaks in the manifolding system, the rest of the cylinders connected to the manifold can be opened up. It should be appreciated that it is necessary to open the valves on oxygen cylinders fully. If any cylinders are found that leak around the valve stem, they should be disconnected and returned to the manufacturer.

Types of Valves Used

Under no circumstances whatever should workmen be permitted to attempt to make any repair to the valves and valve fittings on an oxygen cylinder. All oxygen cylinders are fitted with valves having right-handed connections. Unfortunately, certain combustible gases are stored in cylinders of similar size and appearance to oxygen cylinders. For safety such cylinders should be equipped with left-handed valves, but there are no laws which make it possible to enforce such a safety measure. There have been one or two isolated instances where a cylinder of combustible gas has been connected up to an oxygen manifold along with oxygen cylinders and of course with disastrous results. These occasions, however, have been rare and even if every combustible gas cylinder were equipped with left-handed valves, we would still have the man who might occasionally, by some means or other, connect a right-hand connection to a left-hand connector. As a matter of fact, the writer knows of one case where an operator endeavored to connect up a connection from an oxygen manifold to a cylinder of combustible gas, and he found he was unable to make a proper connection because the thread on the valve of the combustible gas cylinder was left-handed. This, however, did not thwart the determined worker, and he went into the machine shop and got them to make up an adapter for him, so that he could make the connection. When instances of this sort occur, it is clear that the workman delegated to look after cylinders, generators, etc., has not been properly instructed and cautioned.

It is needless to talk about the operation of the actual welding units, that is, the blowpipe, gas regulators, hose and the installations using individual oxygen and acetylene cylinders where they are employed. Every manufacturer of apparatus puts out detailed instructions of how the various items of equipment are to be connected up and operated, and if users would follow these instructions, few, if any, accidents would occur. If, for some reason or other, oxyxgen or acetylene regulators which are employed for adjusting the pressure of the gas for delivery to the blowpipe, become disarranged, do not permit workmen to attempt to repair these themselves. Large establishments can, of course, have a department where welding equipment can be periodically overhauled, repaired and tested, and can employ in that department a man who is properly and thoroughly skilled in his

work; but in the case of smaller establishments it is advisable for defective apparatus to be returned to its manufacturer when overhaul or repair is necessary.

It is important to test the working pressure gages on the regulators periodically. These are the pressure gages that indicate the delivery pressure of the gas from the regulator. As previously mentioned, acetylene never should be used in a blowpipe or in a hose or piping system at pressure over 15 pounds per square inch, and it is on this account that the importance is emphasized in making sure that the working pressure gages, particularly those on the acetylene supply, are periodically tested, to see that they register correctly. You hear occasionally of accidents where the hose supplying the gas to the blowpipe has burst. In nearly every case this can be traced down to the fact that acetylene was being supplied to the hose at a pressure in excess of 15 pounds per square inch, either intentionally or because the working pressure gage on the regulator did not record properly, with the result that a backfire in the blowpipe propagated through the blowpipe to the hose. The backfire would not matter at all if the pressure in the hose were not above 15 pounds per square inch. The acetylene would not even burn. But, when the pressure is over 15 pounds to the square inch, the acetylene may readily decompose and cause the hose to be ruptured and probably disarrange the functioning of the regulator attached to the gas cylinder.

Long lengths of hose of too small a diameter should not be used. A number of blowpipes function properly only when the acetylene is delivered to the inlet to the blowpipe at pressure somewhere betwen 10 and 12 pounds to the square inch.

It is advisable to say a word about the acetylene cylinders. Some may not appreciate the fact that an acetylene cylinder is not merely an empty shell containing compressed gas the same as an oxygen cylinder. The interior of an acetylene cylinder is completely filled with a porous material such as asbestos or a concrete made up of charcoal instead of crushed stone. This porous mass has a porosity of about 70 to 80 per cent.

What the Cylinders Contain

It is found that if acetylene is compressed into a porous substance, and where the porosity does not exceed 80 per cent, the acetylene cannot be exploded or ignition propagated when the pressure is over 15 pounds per square inch, as it could be if the cylinder contained no porous mass. Therefore, a cylinder properly constructed and containing the proper porous mass can be used safely for the storage of acetylene at over 15 pounds pressure per square inch. Cylinders commercially used today, in addition to containing the porous mass, also have in them a solvent, which will dissolve many times its own volume of acetylene, thus making it possible to store in the cylinders large quantities of gas at comparatively low pressures. A charge cylinder of compressed acetylene contains practically no free gas. All the gas that is in the cylinder is in solution in the liquid solvent, which liquid solvent is in turn absorbed in the porous mass in the same manner that a sponge absorbs water. When the valve of the cylinder is opened and pressure released, the acetylene gas comes off from the solvent in the same manner that CO_2 bubbles up through the water in a seltzer water siphon when the valve is opened. Acetylene cylinders should be stored and used standing upright.

As mentioned previously, the safety devices in acetylene cylinders consist of fusible plugs which melt at a temperature of 212 degrees Fahr. It will be seen, therefore, that care must be taken not to let any flame come in contact with the fusible plugs. Otherwise they will melt instantly and release the full charge of gas in the cylinder.

Insistence should be made that all welding operators wear suitable goggles. When securing goggles it is advisable to have them comply with the specifications for goggles of the "National Head and Eye Protection Code" of the United States bureau of standards. Welders employed on heavy work should be supplied with fireproof gauntlets and aprons as a protection against radiated heat, and it is considered advisable where welding is being performed in the interior of some structures to insist that all outer clothing be fireproof.

Safety practice does not end with proper operation of welding equipment. Welding must only be used for work where welding can be considered good and safe practice for construction or repair. Some users become overenthusiastic and attempt to employ welding on work where it should never be attempted.

Must Conserve Power in Steel Plants

BY F. L. COLLINS

IN HIS paper, discussing the importance of power plants in the steel industry, Mr. Entwisle has pointed out that in the early days of the industry, "there were no adequate sources of or means of transporting to the plant, the large quantities of power required, and long before any knowledge of electrical generation and transmission, it was recognized that the sources of power in the industry itself necessitated their utilization at the plant." In the latter part of his article he states that, "The power plant is linked with the utilization at highest efficiency of all the by-products of the industry, and the plant that strives only to utilize sufficient of its energy producing by-products to carry its own load is looking backward, not forward." The writer agrees with Mr. Entwisle that in most steel plants many improvements in economy of power generation are possible, thus liberating for manufacturing or public use great quantities of power which are at present a total loss. The sources of energy in the steel industry, their utilization and conservation constitute a subject which deserves the most intensive study on the part of every person connected with the power system or management of the plant.

In the manufacture of steel we have the following by-products which may be utilized as sources of power: 1. Coke oven gas; 2. coke breeze; 3. tar; 4. waste heat from open-hearth furnaces; and 5 blast furnace gas.

Practically all of the surplus coke oven gas can be used in reheating furnaces, in soaking pits, and at open-hearth furnaces in conjunction with the burning of tar. In the development of steam used in the plant for various purposes, coke oven gas can be used efficiently. It can be used also at the blast furnace boilers in case of an emergency, or the occurrence of some abnormal condition which causes a shortage of blast furnace gas. These are the most economical ways of using this by-product.

Coke breeze is another important source for the generation of power in many modern steel plants. This energy must first be converted into steam, which can be used in the turbine for the manufacture of electric power, directly in mill engines, or in by-product recovery in the coke plants.

All surplus tar from the manufacture of coke can be used efficiently in steel-

Discussion of the paper, "Economic Importance of the Power Plant in the Steel Industry," presented by E. F. Entwistle at the New York meeting of the American Iron and Steel institute, Oct. 27. The author is in the electrical department, Gary works, Illinois Steel Co. Gary, Ind.

making in the open hearth, or in reheating furnaces at the mills. Tar can be used also in making steam where an emergency supply of heat energy is required on a moment's notice.

In recent years much of the waste heat from the open-hearth furnaces has been recovered in the form of steam to be used in making gas at the open hearth or mill gas producers, to drive rolling mill engines, or to supply power for presses and quick-acting shears, and also in generating electric power. All furnaces which give off unused heat to any extent should be equipped with waste heat boilers.

We now come to blast furnace gas which offers the best and most efficient source of electric power in the steel industry. This is due to its constant supply, uniform quality, the ease with which it is handled and the great developments made in the conversion of this form of energy into electric power. The big fluctuations in load in a steel plant can be met quickly by the gas-driven unit. The accompanying curves indicate how closely the available generating capacity at the switchboard can be kept to the load requirements. Although these gas-driven units are small in capacity compared to the large turbines, the ease with which units may be put on and taken off enable the operator to follow the load requirement quickly. In most modern plants the greater proportion of this gas not used in blowing engines is utilized in the production of electricity.

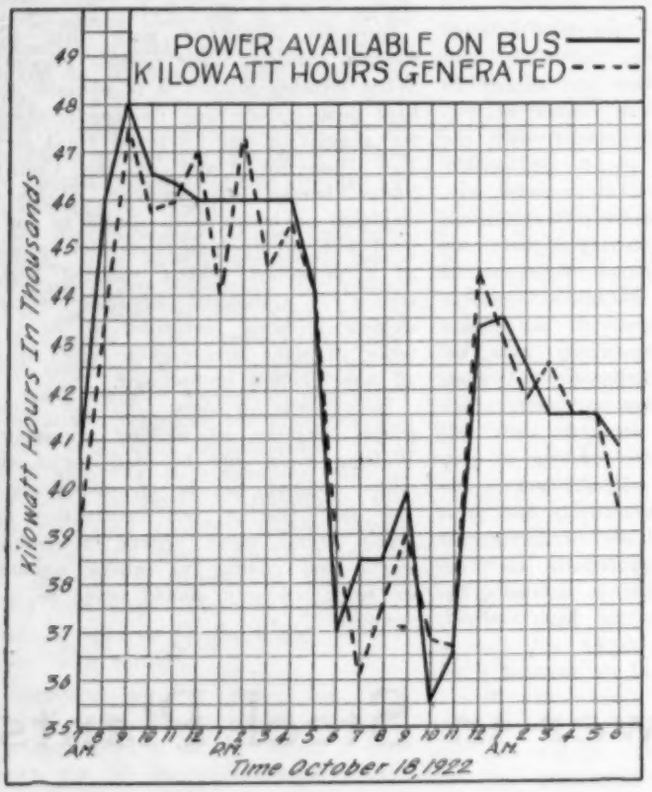


CHART SHOWING RELATION OF POWER CAPACITY ON BUS AND POWER GENERATED BY GAS ENGINES

Taking all of the heat energy consumed for the generation of steam used on the plant at the Gary works, the use of by-product energy is so well balanced that only approximately 1.7 per cent of the fuel used is supplied directly by coal. This coal is used entirely for pilot fires in the blast furnace boiler plant.

The following tabulation will give an idea of the proportion in which these by-products have been utilized in generation of steam throughout the plant:

	Per cent
Waste heat	43.0
Blast furnace gas	28.0
Coke breeze	23.0
Tar	1.3
Coke oven gas	3.0
Coal	1.7

There are many reasons why every large steel plant should have a power plant for the development of power, aside from the saving in fuel, which is vitally important in itself. It is not hard to realize, and could be shown by figures, that all of these sources of energy can be utilized most efficiently in the manufacture of power close to its source. Steam can not be carried to any great distance without serious energy loss. Maintenance of steam lines is a costly item. Neither would it be practical to pipe blast furnace gas to any considerable distance, due to the large and expensive piping required. In the power system, a few principles should be carried out to obtain greater efficiency and reliability of service. All of the economies in the development and use of power can not be made at the power house. It does little good to have a highly efficient power plant if throughout the mills the power is not delivered and utilized with the highest efficiency and without interruption.

To protect the system from atmospheric disturbances and insulator failures due to many causes, all feeders to the separate mills should be 3-phase cable distribution, placed underground, all protected by high voltage and high frequency absorbers. This is extremely important in maintaining uninterrupted service. As far as possible all power should be supplied directly to large mill drives and other equipment at the generated voltage, thus eliminating transformer losses.

Another instance of conservation of energy is in the elimination of conversion losses by the use of alternating instead of direct current for all small mill motors. As an illustration of this, our merchant mills, which have a capacity of 130,000 tons of finished product per month, are operated almost entirely by alternating current. This effects a saving of about 16 per cent of the power that would be required if direct-current motors were used. The only transmission losses that occur with the alternating current system is about 2 per cent for transformers and less than 2 per cent for feeders.

Reliability of power service is one of the most important economic factors in the steel industry. Every known means should be used to secure this reliability. We all know how important it is to provide for an uninterrupted water supply at the blast furnace, coke plant, open hearth and reheating furnaces throughout the mills. A loss of water, or even a shortage, may cause many thousands of dollars in damage to equipment in a short time, besides endangering the lives of employes. To meet this necessity the power plant should be located as close to the pumping station as practicable, and that portion of the power system which controls the water supply should be completely independent.

Supplies Municipal Power

At the plant with which the writer is connected, we not only develop all power required for plant operations, but supply the requirements of other plants and of the city of Gary, which amounts to approximately 25 per cent of the total power generated. In supplying power to our city we are required to use extreme precautions to insure an uninterrupted supply, since fire protection is dependent entirely upon high-pressure, electrically-driven pumps.

Athough these and many other methods of producing and conserving power from by-products which are in use today are a great improvement over the methods in use even a few years past, still there is no doubt that present-day methods can be brought to a much higher degree of efficiency in practically all mills. Engineers all over the country are constantly striving to this end.

In the interest of economy and efficiency every manufacturer who develops power from coal or plant by-products will welcome the advent of the superpower system, since it will help to absorb the surplus energy during periods of low demand at the plants. Yet this will not solve entirely all of the problems connected with saving by-products which must now be necessarily wasted during Sunday and holiday periods. It

is important that every mill organization do its utmost to find a solution in their respective plants.

Converter Makes Better Grade of Steel

(Concluded from Page 1556)

is of a type common for this purpose, consisting simply of a ¾-inch pipe for the main body, with a ¼-inch pipe inside for the oil. When in use the converter blower is run at about 1 pound pressure or less, while the high-pressure air serves to break up the oil. The open end of the large pipe is plugged up, and an outlet for the flame provided by drilling a ½-inch hole in the side near the end, allowing the flame to strike downward to heat the bottom. Such a burner will heat a dry lining ready for steel in 20 minutes. In repairing the converter the ganister in front of the tuyere pipes is chipped away down to these pipes, to insure clean, solid tuyeres every day.

The usual blast pressure on the converter is about 4 pounds at the start, which may be reduced to as low as 1½ pounds near the finish of the blow, depending on the reaction.

Blowing Angle Greater

For some unknown reason nearly all books on the subject recommend a blowing angle of 5 to 7 degrees. This was evidently satisfactory in the days when the major portion of the charge was pig iron, but is not at all suitable for blowing mixtures of 75 per cent and up of scrap. An angle of 15 to 20 degrees has been found more satisfactory for the prevention of oxidation in the converter. Apparently the larger angle facilitates the removal of the highly oxidized slag, and this slag should be allowed to slop over the mouth of the converter without reduction of blast pressure, as long as the slag is heavy enough to protect the metal itself from the cutting action of the blast. Should the blast be reduced at this stage the slag simply reoxidizes the bath, resulting in poor metal, and increasing the length of the blow, as well as being injurious to the lining. The blowing loss will be found to be lower by this method of blowing than by trying to hold everything in the vessel, probably due to less oxide formation. Near the end of the blow, as the slag becomes light, the blast should be reduced to prevent oxidation of the metal and the throwing out of iron. The flame should be cut short at the end of the blow, as soon as the operator is sure the flame is dropping, instead of waiting until the flame has practically disappeared. This will aid in preventing oxidation, as will be shown by the increased stiffness of the slag on the metal, allowing the metal to be poured into the ladle practically free from slag.

The usual deoxidizers used in converter steel are ferromanganese and ferrosilicon. Since ferromanganese has a rather high melting point the most efficient way to make the addition is in the melted form, but for the small quantities used in each ladle, the cost of melting is prohibitive. In a normal blow, when using molten ferromanganese, the loss in manganese, that is, the amount used up in the actual deoxidizing, is about 10 per cent. The next most efficient way is to heat the manganese, in small lumps, in the ladle while the ladle is being heated. This gives a good mixture, but the loss is about 20 per cent. However, in most small foundries the same ladle is used over and over, with little time between blows, making it impossible to preheat the manganese in this way. In this case the manganese, in large lumps, is wetted and thrown into the bath as soon as the blow is finished, and the vessel is in a horizontal position. While the loss, due to a large amount of the manganese going into the slag, is about 50 per cent by this method, it is about the simplest and most convenient way of making the addition, and gives good results.

Ferrosilicon, with its low melting point, will have satisfactory results if broken up in small pieces and added in the ladle immediately before pouring in the steel. Other deoxidizers besides ferrosilicon and ferromanganese are on the market. These are usually used for especially high grade steel, together with the regular manganese and silicon.

With properly made steel the addition of aluminum usually is not necessary or desirable. Aluminum will lower the tensile strength and ductility, and its use should be watched closely. In general the use of aluminum, in amounts of 1 ounce to 100 pounds of steel is recommended as a safeguard against pin holes where there is danger of a damp mold, or where wheat flour or other vegetable matter comes in contact with the steel. Where it is necessary to add aluminum to prevent the steel from *coming back* or mushrooming in the heads, something is wrong in the melting practice. Aluminum is best added cold to the stream as the mold is being poured.

A great many elements enter into the production of castings outside of the melting. To get satisfactory results from converter steel, which at best is the most difficult of all to handle, every foundry must make a study of pouring, gating and molding methods for its particular work. The use of green-sand molds opens a wide field in the cutting down of losses due to cracking, and with proper care and suitable facing a great many molds can better be produced in green sand that would ordinarily be termed dry-sand work. The substitution of green-sand cores with plate arbors for regulation dry-sand cores is often the solution of a hard problem, and in the long run may be found the more economical way as well. Many impossible jobs are made possible by the use of chills, both external and internal. In fact, nearly all classes of work can be made within the capacity of the converter, but, of course, there is an economical limit. However, it is believed that the converter, with careful handling, can hold its own in its field, and that it is well worth while to consider the possibilities of improved practice before deciding to replace the converter with more costly equipment.

Ohio Foundry Operations Show Slight Loss

Changes in operations of Ohio foundries were slight during October, according to the monthly trade report issued by the Ohio State Foundrymen's association. During October the actual melt declined to 61.4 per cent as compared with approximately 63 per cent in September. In explanation of the decline, the report states that the slackening is seasonal, many plants attempting to reduce inventories.

As was the case in September, 68 foundries returned reports indicating a normal melt of 22,915.8 tons. The actual melt totaled 14,073.9 tons. Total stocks on hand increased somewhat as did stock received. The trade report may be summarized as follows:

		Tons	Per cent of normal melt
Normal melt	.....	22,915.8	100.0
Actual melt	.....	14,073.9	61.4
Pig iron received	.....	7,583.6	33.1
Spot	1,790.5	.....	....
Contract	5,793.1	.....	....
Scrap iron received	.....	3,023.62	13.2
No. 1 machinery	1,652	.....	....
No. 1 railroad	.....	.....	....
Miscellaneous	1,371.62	.....	....
Pig iron on hand Oct. 1.	.....	14,492.7	63.3
Scrap on hand Oct. 1	.....	5,139.1	22.4

Nonferrous operations showed a satisfactory increase with October totals higher than in September. Statistics on these foundries are a new feature in the trade report. During September nonferrous foundries operated at 65 per cent of normal while during October the activity was increased to 74 per cent.

Reviews Management Progress

Reports and Questionnaires Show Conclusively That Principles of Industrial Management Have Received Wide Acceptance in Theory and Practice During Last Decade —Seven Universities Have Added Management Subjects to Curricula

BY L. P. ALFORD

TEN years have passed since the committee report on the "Present State of the Art of Industrial Management" was presented to the American Society of Mechanical Engineers. A request has been made for a review of the progress of management during the intervening decade. Unfortunately for the purpose of such a study, eight of these 10 years were abnormal, many of the management changes and innovations introduced were of a temporary nature or were mere expedients, and it is difficult to separate them from other and more permanent developments. The only satisfactory way to treat the review is to base it upon the report of 1912, which was well received and in large measure approved. This course has therefore been adopted.

At the outset we should recall and pay generous tribute to three of our late great leaders who aided in preparing that report and took part in its discussion: Frederick W. Taylor, the pioneer in management; Henry L. Gantt, who humanized the movement; James M. Dodge, the earnest, constructive supporter. During our 10-year period these men of vision and power completed their life work.

To obtain information on the worth while changes which have taken place, letters were written to management and industrial engineers, to executives of plants in various lines of industry, and to educators familiar with industrial developments. Many interviews were held with men having industrial and managerial responsibilities. The response to these requests has been most generous.

The report of 1912 declared the new element in management to be: "The mental attitude that consciously applies the transference of skill to all the activities of industry." It also quoted and indorsed three regulative principles: 1. Systematic use of experience; 2. economic control of effort; 3. promotion of personal effectiveness. New interpretations and expanded meanings have been given to these principles, but they have in nowise been weakened or superseded. One correspondent writes: "Note, for example, the nearly universal acceptance of the principles . . ."

In answer to the question, "What steps have been made in the progress of management since 1912?" a wide range of opinion was expressed as shown by the following 16 quotations from correspondents' letters. The first gives a particularly well balanced judgment of the situation.

"It seems to me that management has very definitely progressed in the last 10 years along certain main lines.

"In the first place, good management is more insistent today on knowledge as a basis of judgment, rather than the old judgment based on personal observation. Management is more and more demanding costs, a knowledge of inventories, monthly profit and loss statements, statistics, and records of all kinds as pictures of events on which to base judgment.

"In the second place, management is now undergoing a definite metamorphosis in the matter of industrial relations, and managers are waking up to the fact, as a practical element in their business, that they owe more to their employes than mere wages, and that whistle blow and hustle are not all there is to factory operation.

"It is this belief and the spirit developing, rather than the volume of the action up to date, which is a matter of very definite progress in the past 10 years of management.

Show Difference In Opinion

Ten opinions, three to the effect that management has retrogressed or made little or limited progress, and seven stating the belief that progress has been made and mentioning certain details of improvement, are grouped to present a contrasting but favorable picture.

"Management (the directing group) has retrogressed in its acceptance of the principles of management, while labor has materially progressed toward a broader acceptance of these principles.

"Little progress has been made in the adoption of scientific management principles in industries outside of metal working, with a few notable exceptions.

"The main advance, and that lamentably slow, has been in putting into practice knowledge already available previous to 1912.

"During the past 10 years we have passed through the period of first glamour, then the reaction of a loss of confidence, and have finally evolved into the general recognition of the legitimate place of a new branch of engineering art and science—management engineering.

"The important steps in progress in management during the past 10 years have been from unintelligent rule-of-thumb management through scientific management to intelligent management. The latter has advanced steadily during the decade.

"The greatest progressive step has been toward standardization of appliances and methods.

"The most definite progress made during the past 10 years is the universal acceptance of the merits of specialized production and standardization of design. These two steps have opened the way to a third simplification of method.

"The reaction from destruction and waste incident to warfare and reconstruction has been toward the elimination of waste in industry as a management function. Waste in all forms has been more closely observed than hitherto, especially during the past two years. This effort to do away with waste has led to the fixing of budgets and the determination of cost standards.

"Important steps in the progress of management since 1912 are:

1. Greater use of facts in the establishment of the standards by which business is conducted;
2. Broader recognition of the principle that industry exists for service to humanity;
3. Greater appreciation of the importance of regularization or control in the successful conduct of our industries;
4. Wider understanding of the economic value and importance of the management engineer in the operation of business.

"There has been a great increase in the use of specifications not only to govern purchased materials but also to attain uniformity of process, quality and cost, and thus to insure reliability of product. Many plants now have well equipped laboratories staffed by scientific men and some regularly employ consulting scientists. In the larger corporations research laboratories are not uncommon. Few of these departments are over 10 years old and they evidence a rapidly growing appreciation of pure science as a tool of management.

"The need of early and reliable figures as a mechanism of management has caused many companies to prepare monthly a complete statement of their business and earnings. A constantly increasing number of companies is publishing annually a detailed statement of their financial condition and many are publishing such statements quarterly. This voluntary publicity indicates a sincerity and frankness rare in management of an earlier decade."

The final quotations in regard to progress, five in number, discriminate between management form and substance. Progress is indicated in both of these aspects.

"The biggest and most lasting accomplishment in the inculcation of

From a paper presented during Management Week, Oct. 16-21, and to be read by title at the annual meeting of the American Society of Mechanical Engineers at New York, Dec. 4-7. The author is editor of *Industrial Engineering*, New York.

management principles is that, like religious teaching, whose significance has been forgotten during years of prosperity, they again, in the years of depression following the war, developed a new significance in the minds of the thoughtful. A principle is not established in the actual social inheritance of the race—as a step forward—until man has applied it to himself and seen whether its application makes him a better man in his social relations. So management principles are being used as yardsticks to measure individual industrial development. This means that these principles are becoming a subconscious part of the metal equipment of industry, and not only is this real progress, it is fundamental.

"The development and use of the Gantt chart is the most important step of progress, because it calls attention to the movement of facts to the necessity of basing decisions on facts rather than on opinions, and because it helps managers to foresee future happenings.

"A second important step is the change in the method of installation from the old type which organized from the top down to the new type which builds from the bottom up.

"A third important step is the development of the theory that the cost of an article includes only those expenses actually incurred in the production of the article, and that the expenses of maintaining one machine in idleness cannot be charged into the cost of the output of another machine. Along with this theory came the development of a method of arriving at costs of idleness and work.

"Probably the greatest progress consists in a better understanding of the problems of management with a particular acceptance of the facts to which Taylor called attention, that management is an art which may be practiced advantageously through the application of certain principles and the scientific method. I do not think, as yet, that the great majority of men at the head of industries have anything like an adequate understanding of scientific management, nor that they are able to distinguish between form and substance in this respect. They have, however, apparently emerged from the attitude of opposition and mistrust of so-called scientific management, but are satisfied with a superficial application of the principles of management.

"The important steps of progress made in management since 1912, I would say, are as follows. The order in which they are named is not significant:

1. A greater appreciation of the human factor in industry.
2. The growing recognition that employes should have a voice in the management as relating to those questions that directly affect them.
3. The recognition of the strategic position of shop foremen and the necessity of more carefully selecting and training them.
4. The increased recognition of the value of fundamental principles.
5. The recognition of, and in a large degree the adoption of, standard systems of cost accounting from the point of view of timeliness, as a barometer rather than history, as an instrument of production rather than a matter of finance.
6. A great development in mechanical equipment, combined with improved plant layout and building plants to fit manufacturing process.
7. A marked advance in sales policies.
8. A marked advance in substituting the trained, competent engineer for the old "cut-and-try" type of executive.

"Using figures, which after all are most impressive, but basing those figures purely on my impressions, I would say that since 1912 industry has progressed in management by some 30 to 40 per cent in the appreciation of the fact that there is a management problem aside from the old concept, which was that the owner had simply to censor the things that happened within his jurisdiction. I should say that there had been a 20 to 25 per cent endeavor to install the mechanisms of management, considering in this figure the generally known stores systems, operation studies, wage-incentive plans, etc. In some cases, as for instance in stores control, the percentage might run a great deal higher, but I am refraining from increasing my estimate, for it is my belief that these mechanisms that we have installed are, for the most part, of a makeshift character, and that in industry as a whole and considering only the larger companies, I doubt if more than five or six per cent are possessed of mechanisms at all acceptable in the final scheme of what management should do and possess.

"As to the real concept existing today of what management is, and what conditions must be considered, influenced and co-ordinated to bring about the situation which should exist, I doubt if more than one-fifth or one-fourth of one per cent of the companies in this country possess a knowledge or even appreciation of what is real management."

Combining and weighing these carefully prepared statements and adding to them certain well recognized facts, there emerges a group of factors of varying importance which mark the progress of management during the past decade. These naturally arrange into three groups, of which the first concerns changes in mental attitude. They are as follows:

1. The ancient controversy as to whether management is a science or an art has subsided, with increased recognition of the scientific basis of management.
2. The attitude of opposition and mistrust toward management and the passionate antagonism to the installation of management methods have in general disappeared.
3. Among those responsible for the carrying on of industry there has grown an appreciation of the existence of problems of management. (The appointment of Herbert Hoover as secretary of commerce and Generad Dawes as director of the budget reflect an appreciation by the government of the need for management in our national affairs.)
4. Acceptance of the principles of management has broadened among engineers, executives in industry, and educators.

The second group of factors of progress concerns the application of management methods.

5. The engineering or scientific method has extended in industrial cost accounting. Among the developments are uniform cost-accounting systems, the theory and method of determining and applying standard costs, the methods of determining idleness losses, the forecasting of sales leading to long term production schedules, and the budgeting of future expenditures.
6. Appreciation of the possibilities and advantages of standardization, simplification, and elimination of waste has spread rapidly during the past two years.
7. The demand for knowledge, facts, as a basis for judgment has grown insistent in all good management. This has led, among other developments, to a widespread use of specifications and graphics as a means of recording and communicating management knowledge. (The first modern book on graphics in the English language was published as recently as 1910. The Gantt-type control chart has been developed into its present form since 1917.)
8. Management methods have been applied or installed in practically every manufacturing industry, in distributing concerns and in institutions. (The report of 1912 listed 52 industries in which some form of management had been installed. A similar list prepared in 1922 would group all the branches of American industry.)

The third and final group of these factors concerns especially significant developments, which after being stated are subject to explanation and comment.

9. Management activities have broadened far beyond the installation of those mechanisms which are usually associated with the Taylor system, and which were emphasized in the report of 1912.
10. Some eight or 10 of the leading American engineering schools have established courses in management since 1912.
11. Appreciation of the importance of the human factor in industry and attempts at its study from a fact basis have been the most striking management development.
12. Management engineers have declared that the service motive must prevail in industry and that all questions concerning human relationships must be considered in a spirit devoid of arbitrariness or autocratic feeling.

To secure information as to the use of management mechanisms, the question was asked, "What mechanisms of management do you consider as generally accepted in principles, in practice?" From correspondents' replies the following 12 quotations have been selected:

"I do not believe that any of the mechanisms of management are generally accepted in principle or in practice.

"I know also that even where some of these things have been established, we hear about them and might conclude that the firm using one or more of them is quite advanced, it often is not at all so. The feature described is only an unrelated 'stunt,' not supported by a complete co-ordinated system of administration and usually begins to go to pieces not long after it is installed.

"There is at the present time a retrograde movement in regard to the building up of stores and making operation studies. However, this is merely a tem-

porary depression in the curve, and I believe that the general tendency of this curve is upward with a very slow ascending grade.

"Incentive wage payment plans have had a temporary setback due to labor conditions caused by the war and to the reluctance of managers in general to consider such plans in any other light but of profit to the company. I do not think that the main service which the incentive plan can give—namely, that of stabilizing relations between employers and employes—has been given sufficient attention by the management.

"I believe that such mechanisms as balance of stores, routing, operation studies, incentive wage plans, personnel work, etc., are generally accepted in principle, but that efforts to install them frequently miscarry, and either accomplish little or no good. This often is due to a failure to see to it that details connected with the mechanisms are fully understood and looked after.

"In a general way, the mechanisms of management are widely accepted now in principle and much less widely in practice.

"Undoubtedly, good storeskeeping is becoming generally accepted. We know that unless we keep accurate records of the materials used we cannot get the most satisfactory results. I think storeskeeping is accepted both in principle and practice as well as the intelligent study of operations.

"I believe that balance of stores is accepted in principle and in practice, that is, in so far as a written record of quantities in stores is kept in the office rather than in a storesroom, and that a minimum or order point is predetermined and an order placed when it is reached. It is generally accepted in principle, though not in fact, that an incentive wage payment plan is desirable and effective. It is accepted in principle that facts are shown on charts better than in tables of figures.

"In principle, undoubtedly, all of the main mechanisms of management have been thoroughly established.

"In a great measure all of the mechanisms of management as developed by Taylor and his immediate associates have been generally accepted in principle. But while they are being widely applied, my impression is that in the great majority of the cases the application is half-baked in character, and the results, while they may be satisfactory to the companies concerned, are far from being as satisfactory as they should be, either to the management or to the employes. By experience indicates that in most such cases an application such as Taylor would have approved almost invariably will result in increased production ranging from 30 to 100 per cent or more, depending on the nature of the business.

"The following management mechanisms have been accepted in varying degrees:

Stores Control. In principle and practice very generally.

Operation Standardization. (*a*) In technical aspects, generally in principle, fairly so in practice. (*b*) In personal aspects, fairly accepted in principle, to a limited extent in practice. [By (*a*) I mean speeds, feeds, equipment, tools, etc.; by (*b*) motion and time studies of human elements.]

Wage-Payment Incentives. Generally in principle and in practice so far as direct labor is concerned. But little application has been made to indirect labor.

Cost Accounting. Generally accepted both in principle and practice.

Selection and Training of Employes. Fairly well accepted as to principle, but little in practice.

Purchasing Control. Generally as to both principle and practice.

Scheduling and Planning. Fairly well accepted in principle. Limited in practice in some industries, well established in others.

"I find mechanisms being accepted one by one without a full realization of the part they are to play in the scheme as a whole. That is to say, I will find a company suddenly appreciative of the value of operation studies. It will thereupon proceed to organize to make operation studies, and for the time being in its new enthusiasm it pursues what threatens to become a hobby rather than a part of its business. This pursuit at times leads into the installation of other mechanisms. It begins to recognize, from the operation studies, that a balance of stores is essential, and that a wage incentive is desirable. I find, however, that this progress is accidental rather than planned.

"Mechanisms of management such as are discussed in the 1912 report are generally accepted in principle, but poorly carrier out in practice in the majority of establishments. On the other hand, a few, representing the best organizations, have developed these things to a degree which serve as valuable guides.

"Planning and control are used more and more extensively in plant operation. The tendency of the majority, however, is to try to gain the benefits of more intensive control through partial makeshifts which record past accomplishments instead of actually planning the work. The importance of control, in fact, in increasing production through elimination of idle time, men, and machinery, is not yet recognized except in a few markedly successful establishments. The developments along these lines are being undertaken frequently through inexperienced, low-grade men, who adopt mechanisms as such, instead of developing existing methods on fundamental principles.

"Balance of stores is accepted almost universally in principle and widely used in practice. Accountants have been quick to recognize its advantages, and have made it an essential part of their accounting mechanism. On the other hand, two of the most vital features for assisting in the control of production, the column of 'stores apportioned' and the entering of 'minimum' quantities of each item permissible, are apt to be omitted.

"The development of time study and job analysis, while wide-spread, has been unsatisfactory; piece rates are more and more universal, but their determination is still largely on a basis of past performance, aided by time studies which simply record these performances in more detail instead of analyzing the operations and determining the methods and units which will give most satisfactory results. There is still lack of appreciation of the fact that the chief aims of time study and job analysis must be:

1. To resolve the operations into such units that they can be recombined to provide for all variables;
2. To take advantage of this unit study to eliminate unnecessary operations, substitute improved methods, and remove defects in equipment and in control;
3. To enable the workman to earn more money with less effort; and,
4. To indicate means for improvement in quality and practicable methods for making the improved quality routine."

To these statements of the acceptance of management mechanisms it is possible to add a few quantitative facts. It will be recalled that the field reports of six industries, given in the report of the committee on the elimination of waste in industry of the Federated American Engineering societies, were based on an extensive questionnaire. The replies in four of these industries—metal trades, boot and shoe manufacturing, men's ready-to-wear clothing manufacturing, and printing—have been studied to show the use of mechanisms of management. The facts brought forth are presented in the accompanying table. This table is a summary for 51 plants studied.

Turning to this table and arranging the eight mechanisms in the order of the number of plants in which they are installed in some form, we have:

Selection and Placement
Incentive Wage Plan
Balance of Stores
Purchase Control

Summary of Management Questionnaires

Mechanisms of Management	Boot and shoe, 8 plants			Men's ready made clothing, 9 plants			Printing, 6 plants			Metal trades, 16 plants			Metal trades, 12 plants*			Totals, 51 plants		
	None	Inadequate	Good	None	Inadequate	Good	None	Inadequate	Good	None	Inadequate	Good	None	Inadequate	Good	None	Inadequate	Good
1 Selection and placement	0	6	2	0	4	5	0	5	1	0	6	10	0	4	8	0	25	26
2 Incentive wage plan	0	0	8	4	2	3	1	1	4	2	6	8	1	3	8	8	12	31
3 Planning centralized	4	0	4	4	2	3	3	2	1	3	8	5	1	2	9	15	14	22
(a) Routing, order of work	4	1	3	4	2	3	5	0	1	5	6	5	2	2	8	20	11	20
(b) Scheduling, machine assignments	3	3	2	3	2	4	3	2	1	4	5	7	1	3	8	14	15	22
4 Time study	5	2	1	3	3	3	5	0	1	6	2	8	2	1	9	21	8	22
5 Cost control	1	3	4	2	5	2	3	2	1	4	3	9	2	6	4	12	19	20
6 Idle-time analysis:																		
(a) Men	7	1	0	6	3	0	5	0	1	13	0	3	8	0	4	39	4	8
(b) Machines	7	1	0	8	1	0	3	0	3	9	1	6	6	0	6	33	3	15
7 Purchase control	1	4	3	3	1	5	3	2	1	3	4	9	1	1	10	11	12	28
8 Balance of stores	1	1	6	3	1	5	4	1	1	2	4	10	1	1	10	11	8	32

*These plants filled out only a condensed questionnaire.

Cost Control
Planning (routing, scheduling)
Time Study
Idle-Time Analysis.

Rearranging in the order of the number of plants where the installation is good, we have:

Balance of Stores
Incentive Wage Plan
Purchase Control
Selection and Placement
Planning (routing, scheduling)
Time Study
Cost Control
Idle-Time Analysis.

The weight of opinion and fact brings the conclusion that certain mechanisms of management have made decided headway in acceptance both in principle and practice, and from an assay of four industries the importance of application yields two groups:

1. Balance of Stores
   Incentive Wage Plan
   Purchase Control
   Selection and Placement
2. Cost Control
   Idle-Time Analysis
   Planning
   Time Study.

In the installation of such mechanisms a significant change is becoming evident. In the early days of management the mechanisms concerned the physical means of production. They were originated by the executives and were ordered into the shop. At a later date, as emphasized in the report of 1921, the value of methods which concerned the worker was appreciated. Training was the first to have any widespread trial. But the attitude was still the developing or forcing of a mechanism from the top downward.

Within the decade under review, another attitude has been adopted in a few instances. It seeks to make the foremen and even the workers consciously parties to the development of the plans before they are put into effect. It endeavors to arouse interest, to inspire to achievement, to release creative energy. Its effect is to install methods and mechanisms from the bottom upward with celerity and improvement in personnel relations.

Management Education Grows

Where there was probably but a single college course in management in 1912, there are now eight, in these institutions: Columbia university, Massachusetts Institute of Technology, New York university, Pennsylvania State college, Purdue university, University of Kansas, University of Pittsburgh, Yale university —Sheffield Scientific school. In addition to this form of instruction, management subjects have been introduced in mechanical engineering courses. Examples are the pioneer work at Cornell university—Sibley College, and at the Worcester Polytechnic institute.

The growing importance of this branch of engineering education is shown by the number of men enrolled. The enrollment of all students in colleges of engineering in the United States for the school year 1921-1922 is given as 53,414. The number in management courses is 1123, identified as

Administration Engineering	725
Industrial Engineering	389
Industrial Management	9
Total	1,123

The 277 students in "Commercial Engineering" courses have not been included, although they undoubtedly received some instruction in management subjects. While these management courses in the beginning were based on mechanical engineering, their character seems to be changing, so that it can now be said that they are based on engineering broadly, with emphasis on fundamental subjects. There is a tendency to lessen or limit qualitative instruction in details of production. Without doubt, the character of the instruction is improving as teachers gain a wider and sounder experience in the application of management principles.

The significance of this new branch of engineering education is not its extent as measured in numbers of students, but in the fact that at least eight leading institutions have added it to their regular and older courses. It is unfortunate that no common name has been adopted for these courses; at least four are in use.

The report of 1912 presented the human factor in industry with particular emphasis on the responsibility of managers and executives to train their workers and the same thought was prominent in the discussion. According to the comment of the committee in its closure, one of the striking characteristics which had already gripped attention was "the presence throughout the discussion of a human spirit in keeping with the best trend of thought toward social justice," and "the development that has taken place within the last few years leading to a new appreciation of the needs and rights of employes."

Henry P. Kendall in his discussion of the report outlined the operation of an employment department which he had initiated. The employment man interviewed applicants, selected workers by tests, placed them in positions for which they were fitted, required medical examinations, kept records of each employe, kept in touch with the foremen in regard to the deportment, skill and earning power of the employes, had charge of discipline and discharge, and gave advice, suggestions, and sympathy to the workers.

These disclosures in outline foreshadowed a great wave of industrial relations work which swept through American industry after the outbreak of war. The movement received its impetus from the demand for workers in a time of extreme shortage, and was influenced by emotionalism and social theory. With the return of a labor surplus in 1921 the unsound features have in the main disappeared, leaving but vestiges of the methods and devices which were initiated in such profusion. The present situation as regards personnel work is appreciation that personnel problems exist, recognition that their solution is a responsibility of management, and a growing realization that job analysis, selection, placement, and training can be put on a scientific basis.

Growth of Works Councils

Associated in thought, though not necessarily a part of any employment or industrial relations plan, is the rise of works councils in American industry. Several hundred have been established during the past decade. In August, 1919, there were 225, in February, 1922, approximately, 725. Their development has been in response to a desire on the part of the workers for a means of expressing their beliefs and wishes in regard to matters arising in employment, and on the part of the management for a means of communicating with their employes and gaining and holding their confidence and good will.

Management engineers as a group have declared that the service motive must prevail in industry, that everything planned and done must be directed to securing the worthy result of producing useful goods with a minimum expenditure of time, material, and human effort. One of the clearest statements was written by Henry L. Gantt a few weeks before his death:

"We have proved in many places that the doctrine of service which has been preached in the churches as religion is not only good economics and eminently practical, but because of the increased production of goods obtained by it, promises to lead us safely through the maze of confusion into which we seem to be headed, and to give us that industrial democracy which alone can afford a basis for industrial peace."

This disinterested purpose has been accepted as an ideal for the entire engineering profession, by becoming the challenging thought in the preamble to the constitution of the Federated American Engineering societies.

To the factors dealing with the steps in the progress of management which have been discussed, should be added a consideration of the extension and growth of management societies which has taken place during the 10 years just past.

There are four societies concerned with management—three in its engineering or technical aspects, and one restricted to personnel matters. The com-

bined membership, not discarding duplications known to exist, is 4014.

Management Division, American Society of Mechanical Engineers	1,740
Society of Industrial Engineers	1,032
Taylor Society	769
Total	4,041

This membership is growing rapidly; more than one-half has been gained during the past two years for that period spans the founding and growth of the management division of the American Society of Mechanical Engineers. Within the last two years joint activities have been originated among these and other societies with the promise of benefits to all who are concerned with management.

Sir Robert Hadfield Presents British View of Kelly Address

THE statements of W. C. Kelly regarding the bessemer patent controversy which appeared in IRON TRADE REVIEW in connection with the recent meeting of the American Society for Steel Treating at Detroit, have attracted considerable attention in British iron and steel circles where the feeling is almost universally expressed that a mistake has been made and that Sir Henry Bessemer never visited the United States during his lifetime. The feelings of prominent British metallurgists toward this question are set forth in a communication to the editor of IRON TRADE REVIEW from Sir Robert Hadfield, London. Sir Robert expresses a point of view which will be readily appreciated by many Americans familiar with international iron and steel history and particularly with the Bessemer patent controversy. His letter is as follows:

I HAVE just read with some concern a certain portion of the statement under the heading "Dedication of Tablet Recalls Bessemer Patent Controversy", which appeared in IRON TRADE REVIEW, Oct. 19, page 1064. It is there mentioned, evidently under some misapprehension, that the late Sir Henry Bessemer, whose name we all honor for the great work he did both in England and America, and in whose remembrance the blue ribbon of metallurgy, the Bessemer gold medal, was instituted, had visited America and in some way made misuse of the Kelly information. I will not go into details with regard to the statement because if Sir Henry Bessemer was never in America, or most certainly not at the time mentioned, the whole statement falls to the ground.

Was Never in America

As it happens, in residence at my week-end cottage at Sunningdale, is a grandson of Sir Henry Bessemer in the person of Howard F. Bessemer, to whom I showed the statement in question because I was personally under the impression that Sir Henry had not visited the United States at all. I thought that he would know whether the remarks about his grandfather, the late Sir Henry Bessemer, were correct or not. He was much concerned with the statement, and as anticipated I found that the late Sir Henry had not visited America. However, it is best that your journal should know this in his own words, which are as follows:

"Thank you for bringing before me the article in IRON TRADE REVIEW of Oct. 19 containing certain statements made by Mr. Kelly regarding my grandfather, the late Sir Henry Bessemer.

"I am quite sure that he never set foot in America, as I know he never went further afield than the Continent. After this should Mr. Kelly still doubt my word, if he will give me the date and length of the supposed visit to America, I should be able to produce an alibi, proving that he was either here or on the Continent at that time.

"Further, perhaps Mr. Kelly would tell me why his father considered it necessary to keep secret all those years such an important and damning fact relative to their steel patents.'

Appreciates Kelly's Work

The original of this letter is in my possession. In view of the good feeling prevailing between our two countries, and not least amongst their metallurgists, I am sure you will take the necessary steps to contradict this statement. To show my own unbiased view on Kelly's work, as we all admit he performed most useful service at his stage of metallurgical work, when I heard there were going to be dedication exercises, though of course I had never anticipated a statement of the above mentioned nature being submitted, I wrote a note to the American Society for Steel Treating, to the following effect:

"I notice that you have very thoughtfully decided to erect a tablet to commemorate the establishment of the first bessemer converter in America, on the site where Kelly's first tilting bessemer steel converter was erected. I note this site is now occupied by the Wyandotte public library.

"If this letter should reach you previous to the exercises taking place, may I as an Englishman, and as one of your honorary members, offer heartiest congratulations on the greatness which William Kelly achieved in his pioneer work. All honor to such men."

The foregoing shows that at any rate an Englishman and a metallurgist desired to join in recognizing the excellent work done by the late William Kelly, but of course not in the misstatement which has unfortunately been made.

In addition to the foregoing, I may say that I also communicated with another well known representative of British metallurgy, G. C. Lloyd, secretary of the British Iron and Steel institute. His words are as follows:

"When I received your letter I had already seen the note in IRON TRADE REVIEW of Oct. 19, giving an account of the dedication of the tablet commemorating the erection of the first bessemer converter in the United States. I do not know whether any direct descendant of Sir Henry Bessemer is still living in the neighborhood of London, but Lieut.-Colonel Cecil Allen, director of Henry Bessemer & Co., is a descendant of Sir Henry's brother-in-law, and he might be able to express an opinion on the statement.

"I think the story has no foundation whatever. If Sir Henry Bessemer had ever been in the United States there would certainly have been some mention of it in his life and letters. His letter to Mr. James Dredge published in the *Journal* of the Iron and Steel institute, No. 2, 1890, page 369, affords pretty clear evidence on this point. On the other hand, there is no evidence whatever that Sir Henry Bessemer had ever heard of William Kelly at the time he conceived his own invention.

"The two Englishmen who are said to have visited W. Kelly are described as young men. At the date at which the visit took place, Bessemer would have been about 41, and it is hardly likely that Kelly would have described him as a young man.

"According to R. W. Hunt in his 'History of Bessemer Manufacture in America' in the transactions of the American Institute of Mining Engineers, Vol. 5, 1877, page 201, the object of Durfee's visit to England was not to buy the Bessemer patent rights, but Mushet's, in which he was successful. This again shows how much reliance can be placed on W. C. Kelly's statement."

I know you will put this question right. If there is anything further I can do in the matter, pray command me.

(Signed) R. A. Hadfield.

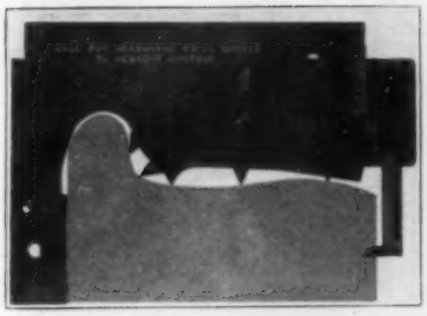


FIG. 1—RAILWAY GAGE FOR MEASURING STEEL WHEELS TO RESTORE CONTOUR

Included are: Development of a management terminology; development of a classification for management literature; standardization of management graphics; and development of methods for the measurement of management.

The report of 1912 stated that the results of good management had been: "A reduced cost of product, greater promptness in delivery with the ability to set and meet dates of shipment; a greater output per worker per day with increased wages; and an improvement in the contentment of the workers."

Management as developed through a generation of effort stands today as a great body of knowledge and practice to facilitate the operation of industry and the conduct of business. Through organization it determines policies, plans basically over long periods of time and fixes impersonal relationships; through preparation it plans in detail how, when and by whom work is to be done; through direction it initiates and maintains the processes of production and distribution. Here, then, is a tremendous, hitherto unknown engineering tool. What is it for? The answer is a spur to every engineer and industrial executive. Industry and business as developed in modern civilization must continue, else infinite misery will overtake the human race. Management is the agency by which community, state, and nation shall endure.

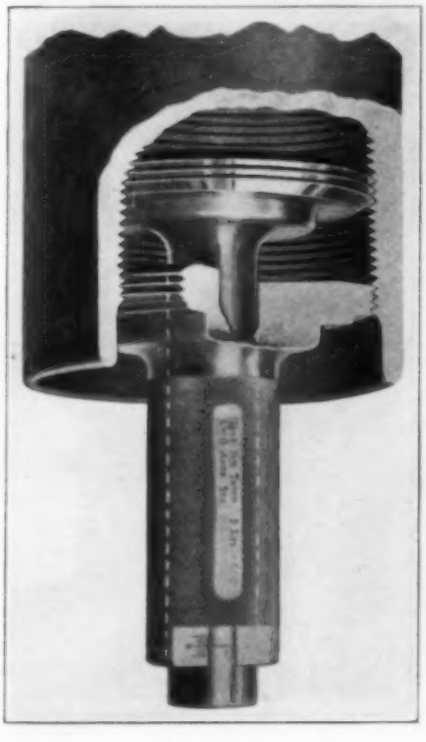


FIG. 2—DOUBLE PLUG PIPE GAGE FOR ACCURATE WORK

Bores and Finishes Gas Engines Cylinders

A machine designed to bore air cooled gas engine cylinders and finish the head of the cylinder at the end of the boring operation has been introduced recently by the Manufactures' Consulting Engineers, Syracuse, N. Y. The machine also can be used in boring gas engine cylinders en-bloc. In boring, three separate cuts are taken, and in finishing the head of the cylinder, two separate cuts are taken. Five spindles are provided which rotate but do not move axially, allowing the five cuts to be taken at the same time on separate cylinders. The work is mounted on a rotating bed having six positions, five working and one loading position. The loading and unloading can be done while the cuts are being taken, so that the only loss is the time required for indexing the fixture. The work holder and the work are fed upward on to the cutting tools by a cam which makes it possible to obtain a quick return, a quick approach, uniform boring, and a reduction in the feed for finishing the head of the cylinder.

A coolant is used to keep the cylinders at the same temperature during the cut so that no heat distortions will appear. The coolant which is pumped through the spindles, assists in keeping spindles and the bearings at a constant temperature. The coolant, as it is discharged, not only keeps the cylinder at a practically constant temperature, but also washes the chips away as soon as they are made. The cycle of this machine for boring a 3¾-inch cylinder, 9 5/32-inches long and finishing the head is 1½ minutes. The height of the machine from the floor to the top of the pulley is 8 feet 2 inches and the base is approximately 5 feet square.

Introduces New Series of Precision Gages

Several new devices for accurate measuring of work have just been introduced by the Pratt & Whitney Co., Hartford, Conn. A gage for measuring the taper on female threads is shown in Fig. 2. This gage is graduated with one division equaling 0.002 inch, which signifies that one division of the handle of the gage represents a variation of 0.002-inch in the pitch diameter in a length of 2 inches. In use, the inner plug is first screwed down into the thread by hand and is followed by the outer gage, both parts being set hand tight. If the taper is correct the witness line on the inner gage will come opposite the zero line of the graduations on the outer gage. Any variation from the true taper is read directly on the scale.

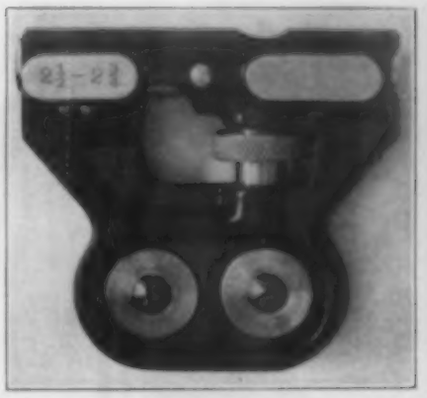
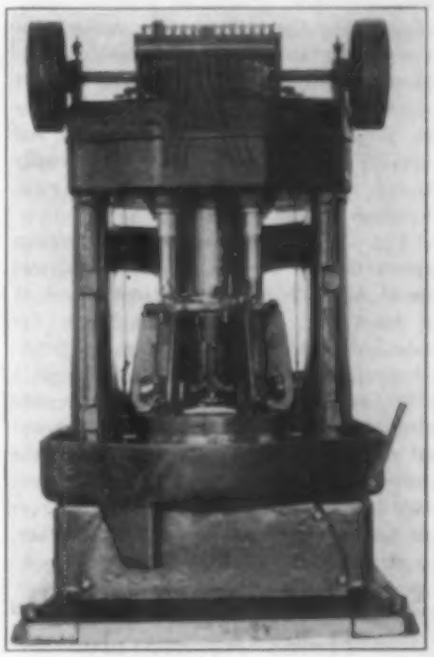
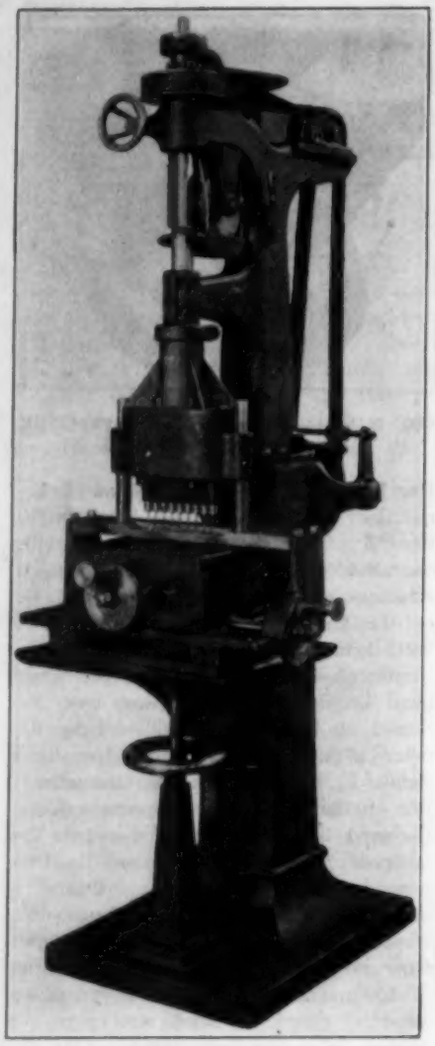


FIG. 3—ADJUSTABLE LIMIT PIN GAGE FOR INTERNAL WORK

A new gage for internal measurement which combines a go and no-go internal gage in a single unit, is shown in Fig. 3 of the accompanying illustrations. Two spherical ended hardened steel pins are carried in a cast iron frame. One pin is adjusted to any size within its range by means of opposite set screws which



CYLINDER BORING MACHINE WHICH SAVES LOADING AND UNLOADING TIME



DEVICE FOR DRILLING ACCOUNTING MACHINE PLATES

lock the pin firmly in position when tightened. The opposite pin works between two stops, one of which is adjustable to any desired limits from 0.001 to 0.025-inch. This pin is moved by a simple motion of the thumb and finger. All adjustments are readily sealed to prevent tampering with the measurements.

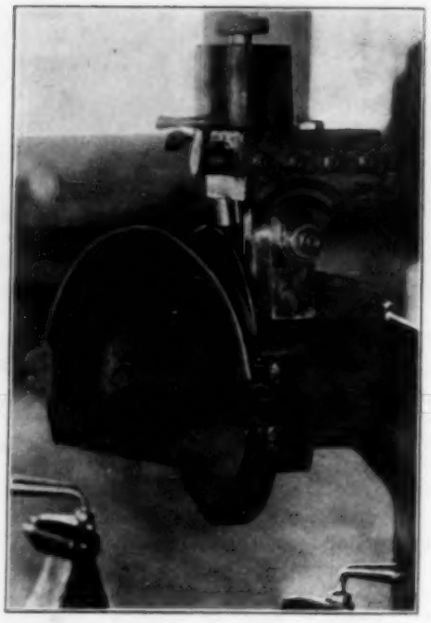
Fig. 1 shows a gage which gives a direct reading of the amount of service metal on a steel or steel tired wheel as a basis for billing foreign roads for wheel replacements according to interchange rules. It tells whether or not a worn wheel is worth turning to restore the standard contour, and the amount of service metal remaining after the turning. A gage under the pointer gives the depth of cut necessary at the junction of fillet and tread to restore the contour.

Special Machine Drills Holes Accurately

A special machine designed to handle especially accurate drilling work recently has been built by the Hoefer Mfg. Co., Freeport, Ill. While this machine was designed for the special case of drilling 540 holes in a die plate used to punch cards in accounting machines, the principle may be applied to any work of the same nature requiring accurate drilling. The die plate has 45 holes lengthwise and 12 rows across. The machine is so arranged that nine spindles drilling every fifth hole complete a row in five operations. The plate to be drilled is fastened to the upper table of the indexing jig by means of accurately located dowel pins, so that, should the plates for any reason be removed they can be replaced in the original position. The upper table is placed on a compound table which can be accurately moved at right angles. One or more exact turns of the indexing handle give the exact distance to be moved. Across the top of the jig a heavy steel plate is carried in which is located the liner and the slip bushings which guide the drills as near the work as possible in order to maintain the required accuracy. Two heavy hardened and ground guide rods rise from this plate to keep the head of the jig in alignment at all times. The head is mounted on the regular ball bearing driller with automatic cam feed and return, so that practically the only operation for the operator is the indexing of the jig and the replacement of drilled parts.

Device Trues Grinding Wheels at Any Angle

A new angular wheel truing device for surface grinding machines has been introduced by Wilmarth & Morman Co., Grand Rapids, Mich. The device is intended for use in shops salvaging and reclaiming worn out milling machine cutters, reamers and drills, as well as in shops making a specialty of cast alloy cutters and tools. By the use of this machine the wheels can be formed easily to correspond to the outline of any surface to be ground. The accompanying illustration shows the wheel truing device in a position for dressing the wheel parallel to the surface of the table. The diamond is fed to the wheel by a knob at the top. By means of a graduated dial the device can be set at any desired angle. This device can be used to dress the wheel without disturbing the set up of the work thereby saving considerable time.



ANGULAR WHEEL TRUING EQUIPMENT DESIGNED SPECIALLY FOR SURFACE GRINDING MACHINES

New Jib Crane Expedites Loading Shaper

For the convenience of railroad shops, steel mills and other industries where heavy work prevails, Gould & Eberhardt, Newark, N. J., have introduced recently a jib crane to facilitate the easy manipulation of heavy pieces. The crane, as shown in the

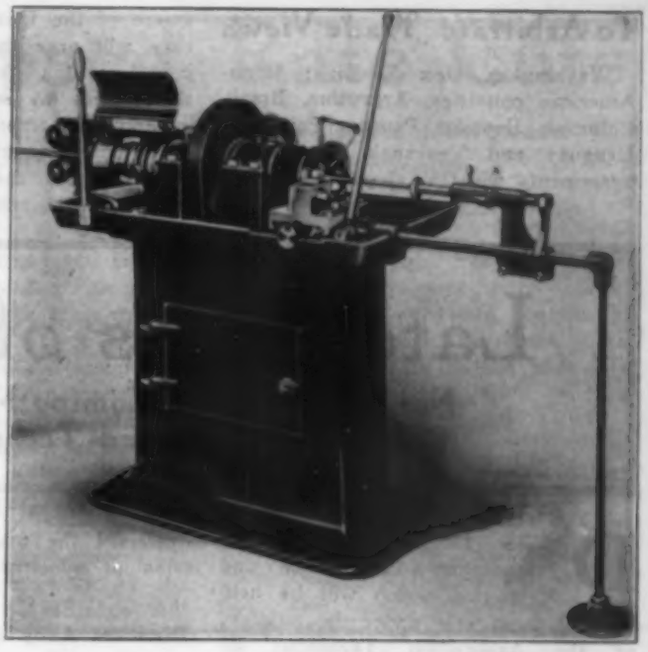
JIB CRANE WHICH FACILITATES LOADING AND UNLOADING THE SHAPER

accompanying illustration, is attached to the shaper opposite to the operating side. With a direct drive machine it is possible to revolve the crane completely around in order to handle work on all sides. The design of the machine is such that it is self supporting, with a capacity equal to that of the shaper. The boom is a single I-beam designed to carry a load of 1000 pounds at the extreme end of the beam. The mast is of heavy wrought steel pipe clamped against the frame of the shaper in two positions. The upper pintle is attached to the mast and has a ball and socket type bearing. The control levers are placed near the operating position to allow the operator to start and stop the machine while remaining near the work.

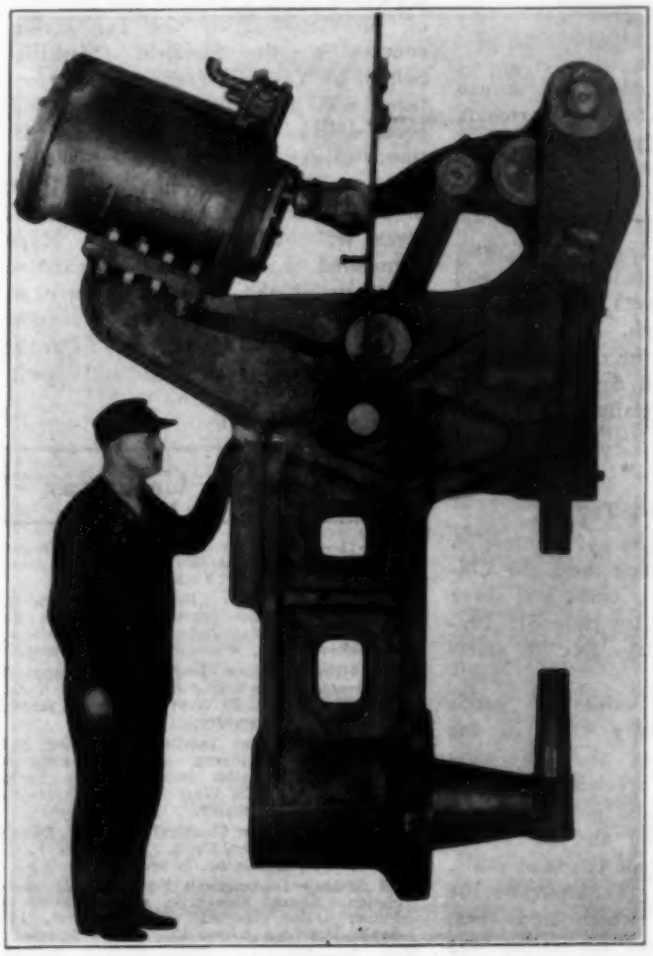
Make Changes in Cutting Off Machines

Several improvements in the design of cutting off machines used for cutting pipe, tubing and bar stock have been made recently by the Modern Machine Tool Co., Jackson, Mich. A double live roller feed has been added to the machine for feeding the stock through the spindle and also an automatic stock stop for gaging the length of cut off pieces. The automatic stock stop is of the same general design as the old stock stop, but is operated from the tool block. An adjustable plate, to take care of the tool setting for different sizes of stock, is attached to the right-hand side of the tool block. When the tool block is fed in to start the cut, a spring brings the stop back into place clear of the work. A stop pin is arranged so that the operator can tell when the tool is clear of the work.

The double live roller for feeding the stock through the spindle is driven through worm gears from the cone pulley shaft. The feed rolls run continuously and are so connected with the collect control lever shaft that the in movement of the collect control lever opens the collect and brings the rolls simultaneously up to the stock. A slight further pressure on the collect lever feeds the stock through the spindle against the stock stop. The collect lever is placed in a vertical position on the new design with a toggle action applied in such away as to do away with the greater part of the friction encountered in the old machine.



CUTTING OFF MACHINE HAVING NEW AUTOMATIC STOCK STOP AND DOUBLE LIVE ROLLER FEED



RIVETING MACHINE OF THE LARGE TYPE WHICH DRIVES UP LAST HEADS IN BOILERS

Detroit automobile companies are reported to be developing four wheel brakes with which cars will be equipped next year. This would considerably increase the consumption of steel in brake drums, rods and other parts.

New Machine Rivets High Pressure Containers

A large riveting machine for use in connection with driving up the last heads in boilers through the manhole has been built recently by the Hanna Engineering Works, 1765 Elston Ave., Chicago. The reach of the unit is from 14 to 18 inches, the cylinder diameter 18 inches and the die has a stroke of 5¼ inches. The total weight of the machine is 9900 pounds and the capacity is 100 tons.

The machine is arranged for portable use in two positions. Suspension is made with the dies vertical as shown in the accompanying illustration. The machine swivels about a point close to the center of gravity, allowing the stationary die to be swung on, and off the manufactured head of the rivet in a direction near to the line of travel. The stake is of forged alloy steel. The distance from the center of the beam stake to the face of the die is 30 inches. The length of the die can be varied in conjunction with the opposite die to take care of shells as small as 42 inches in diameter. The distance from the axis of dies to the long face of the throat is 16 feet. This machine is built for use on high pressure containers, in which the rivets are 1¼ inches in diameter and the plates 1½ inches thick. The riveter may be arranged with either hydraulic or pneumatic type mechanism.

To Arbitrate Trade Views

Washington, Dec. 5.—Eight Latin-American countries, Argentina, Brazil, Colombia, Equador, Panama, Paraguay, Uruguay and Venezuela now have agreements with the chamber of commerce of the United States by which they will urge the insertion in trade contracts of a standard clause binding the parties to submit controversies concerning interpretation, fulfillment or performance to arbitration. Parties to the contracts can name their own arbitrators but provision is made for official arbitrators in case the contending parties make no selections. The plan has been projected by the national chamber of commerce to avoid costly and tedious litigation in the courts and to promote good feeling.

Late News of the Societies

Notes on Past and Coming Meetings of National and Local Trade and Technical Organizations

DATES for the International Foundrymen's conference and Exhibition which will be held in Paris next year under the auspices of the Association Technique de Fonderie de France have been selected. The exhibition of foundry supplies and equipment, which will be held at the Ecole d'arts et Metiers, will open on Thursday, Sept. 6, 1923 and close two weeks later, Thursday, Sept. 20. The International Congress of Foundrymen will open Wednesday, Sept. 12 and continue until Saturday, Sept. 15. Elaborate plans are being made and it is expected foundrymen's organizations from all over the world will co-operate.

The British Iron and Steel institute will hold its autumn meeting in Italy early in September, 1923, and the dates of the exhibition have been arranged so that members and others attending the Italian meeting may also attend the congress in Paris.

* * *

Talks on Mining of Coal

The bimonthly meeting of the mining section, Engineers' Society of Western Pennsylvania, was held in the William Penn hotel, Pittsburgh, on Tuesday, Nov. 28. "The Stripping Method of Mining Coal" was the subject of a paper delivered by Samuel A. Taylor, consulting mining engineer, Pittsburgh, which was illustrated by motion pictures and lantern slides.

* * *

Industrial Gears Described

At the bimonthly meeting of the mechanical section, Engineers' Society of Western Pennsylvania, held in the Blue room, William Penn hotel, Dec. 5, a paper was presented entitled "The Modern Industrial Gear." With the aid of lantern slides, W. H. Phillips, manager, engineering department, and L. F. Burnham, mechanical engineer, R. D. Nuttall Co., Pittsburgh, fully described the manufacture and application of industrial gears, etc.

* * *

Discusses Alloy Steel

At the meeting of the Toronto chapter of the American Society for Steel Treating held Nov. 24, Marcus Grossman, Dunkirk, N. Y., delivered an address on the subject of "Alloy Steel" giving a complete description of the advances that have been made in this branch of metallurgy.

* * *

Talks on Corrosion

Work of the United States bureau of mines in connection with corrosion was fully described by R. J. Anderson of the bureau, at the regular monthly meeting of the Pittsburgh chapter, American Society for Steel Treating. This meeting was held jointly with the American Institute of Mining and Metallurgical Engineers at the Chatham hotel, Pittsburgh, Dec. 5. Prof. S. L. Goodale of the University of Pittsburgh, presented detailed data in connection with "Metallurgical Education."

* * *

To Demonstrate Sand Testing

As the culmination of almost a year's work on molding sand, the Chicago Foundrymen's club will have open house at the City club, 315 Plymouth place, Saturday, Dec. 9, starting at 1 o'clock.

At this time an exhibit of sands from practically every state in the union will be shown, physically analyzed by vibrator precipitation. This method determines the proportions of bond and silica sand and by visible means affords a test of the sand grain, sufficiently accurately to determine the class of work for which it is best suited. This method of testing has been worked out by E. W. Smith, one of the members of the club, who will read a paper on the method and demonstrate it by making determinations from samples of sand.

The test is of much interest to the foundryman, the purchasing agent, producer, salesman and student as it is simple and gives a direct visible result.

* * *

Engineers to Lecture

Lectures by prominent engineers are being made a part of the program of development of the engineering courses in the Sheffield Scientific School of Yale university. These lectures will deal with the engineering profession as a whole, with the lecturers chosen both for their knowledge of engineering and their experience in dealing with public problems. Lectures will be given by John Hays Hammond, L. W. Wallace, executive secretary of the Federated American Engineering societies and a former member of the faculty of Purdue university. Mr. Wallace will speak at Yale on Dec. 12.

Convention Calendar

Dec. 7-13—The National Exposition of Power and Mechanical Engineering at the Grand Central Palace, New York.

Jan. 11-12—American Engineering Council. Annual meeting headquarters F. A. E. S., 24 Jackson place, Washington. L. W. Wallace, 24 Jackson place, Washington, is secretary.

Feb. 14-16—American Institute of Electrical Engineers. Mid-winter convention, New York. F. L. Hutchinson, 29 West Thirty-ninth street, New York, is secretary.

Feb. 19-21—American Institute of Mining and Metallurgical Engineers. Annual meeting in Engineering Societies building, New York. F. F. Sharpless, 29 West Thirty-ninth street, New York, is secretary.

April 3-7—American Chemical society. Spring meeting New Haven, Conn. L. Parsons, P. O. Box 1515, Washington, is secretary.

April 30-May 3—American Foundrymen's association. Annual convention and exhibition at Public Hall, Cleveland. C. E. Hoyt, 140 South Dearborn street, Chicago, is secretary.

May 3-5—American Electrochemical society, semiannual meeting, Hotel Commodore, New York. Colin G. Fink, 327 South La Salle street, Chicago, is secretary.

Strategy May Speed Rate Cuts

Washington Observers Believe Commerce Commission Will Accelerate Downward Movement in View of Radical-Farmer Bloc's Antagonism to Transportation Act—No Basic Change in Law Indicated Before March 4

WASHINGTON, Dec. 5.—Antagonism of the radical-farmer bloc in the house and senate to the Transportation act, especially the guarantee clause, and the demands of the bloc for reduced freight rates on farm products and livestock have precipitated much speculation here whether the interstate commerce commission will prove sensitive to this trend and reduce rates.

Officially, of course, the commission can take no cognizance of the program of the radical-farmer bloc, but there is no question but that the commission will speed the down current in rates. Some talk is heard of another percentage reduction early in 1923, but a general rate case consumes months. The more widely held opinion is that the commission will work down rates a little here and a little there, as it has been doing for the past year, but at an accelerated pace.

The Transportation act is close to the commission's heart. From it the commission has derived the most sweeping powers it has ever held. The program of the radical-farmer bloc is triparte—reduce rates, eliminate the guarantee clause and restore power to state commissions. The latter, the commission would be most loath to see brought about, and conceivably the commission would go a long way toward appeasing the radical-farmer bloc. The means at the commission's disposal is to lower rates. The hearing to begin Dec. 11 on the Kansas commission's demand for reduced grain rates may give some indication of the commission's policy.

That the Transportation act will not be changed prior to March 4 now is assured. Chairman Cummins, of the senate interstate commerce committee, has stated definitely his committee will report out no amendments. This smothers the Capper bill, a holdover from last session, ousting the guarantee clause and restoring the powers of the state commissions. It also means that any changes proposed by the La Follette group will not be reported out. It means, too, that the revision desired by Secretary Hoover and others of the administration, to bring the railroad labor board to Washington, to make its decisions enforceable and to strengthen the act generally, is not possible. The status quo will be preserved for some months at least.

The logic of the radical-farmer bloc in respect to the Transportation act is difficult to comprehend. In the first 10 months of this year the railroads have averaged a net return of slightly less than 4 per cent on their commission valuation of $18,900,000,000. The repeal of the Transportation act or the amendments suggested by the bloc would render the railroads still more unable to equip themselves with the cars and locomotives for hauling the farmer's products. In the last analysis, it is believed the bloc proposes to remedy the transportation situation by hamstringing the railroads. The bloc's program would lead direct to government operation.

Equipment Increased

In all of 1921 the railroads ordered or put into service 69,436 new freight cars. In the first 10 months of this year they ordered or put into service 117,238 cars, or 47,802 more than in 1921. In 1921 the railroads ordered or put into service 1382 new locomotives, while in the first 10 months of this year they ordered or put into service a total of 2098. On Nov. 15 the railroads had 235,660 freight cars in need of repairs, or 10.4 per cent of the number on line. On Nov. 15 the number of bad-order cars was 333,616, or 14.4 per cent.

Three more service orders have been issued by the commission, none of them involving the movement of more than 250 cars of coal. With the virtual close of navigation on the Great Lakes the day of rescindment of service order No. 25 draws nearer at hand, but the commission has given no inkling as to when it will make all open top equipment available to all shippers, instead of restricting open top cars with sides over 42 inches in height to the coal trade.

Freight loading in the week ended Nov. 25 is expected to drop below 950,000 cars and keep on sliding for the remainder of the year. The elimination of the Great Lakes ore and coal trade alone will make a difference of more than 50,000 cars weekly. Car shortage likewise is becoming less acute, the shortages in the period Nov. 15-23 averaging only 152,565 daily, with an offsetting surplus of 5306, compared with the record shortage of 179,239 cars in the last eight days of October.

Hoover's Report Advocates Advance Rulings

Washington, Dec. 5.—So-called advance rulings whereby trade associations and other co-operative bodies could receive governmental sanction or approval of their courses of action before embarking upon them are again urged by Secretary of Commerce Hoover in his annual report. Antitrust laws now effective were largely contemplated by conditions now ameliorated and are detrimental to organizations which do not contravene the public interest, Secretary Hoover states. In urging so-called advance rulings he says:

"All who know the situation in such matters will realize that the problems of co-operative action are mainly the concern of the smaller businesses. Such a measure as suggested would serve actually to protect small business and thus to maintain competition. Big business takes care of itself. Legitimate trade associations and other forms of business co-operation would be greatly stimulated along lines of public welfare if such a plan were adopted.

"It appears to me that the time has come when we should take cognizance these necessities if we are to have a progressive economic system. Its growing complexity, its shift of objective and service, require a determination based upon a proper sense of maintenance of long-view competition, initiative, business stability, and public interest."

Discover New Ore Body

New York, Dec. 4.—A new body of iron ore, containing 60.8 per cent metal, has been discovered at the lower Mt. Hope mine of the Replogle Steel Co. Indications are that the deposit is large. It is known that the Replogle Steel Co., including the properties acquired when the Empire Steel & Iron Co. was taken over, now has at least 200,000,000 tons of iron ore and probably a great deal more than this figure.

Reports Upon Scientific Assistance of Bureau

In the forthcoming annual report of the secretary of commerce for the fiscal year 1921-22, a brief review is given of the co-operation of the department with manufacturers' representatives. Following the authorization of congress for use of the physical laboratories and services of the bureau of standards in national service, committees of manufacturers' representatives in different trades have been established and are earnestly co-operating with the bureau on various problems of scientific investigation in methods of manufacture and the elimination of waste. An extension of the bureau's work was undertaken in co-operation with many industries in the establishment of a division of simplified practice. Committees acting in co-operation with the experts of the department during the fiscal year have completed the simplification of dimensions in paving brick and certain articles of furniture with preliminary work in lumber, farming implements, automobile parts, paints, hardware, etc. It would be difficult to estimate the annual value to industry and to the public at large of such simplifications, but it would not be an overstatement that their values run into many millions per annum. Scientific and co-operative work of this character, which in no way infringes upon invention or novelty, has become absolutely vital to the nation, if it is to maintain high wage levels and high standards of living in the face of world competition.

Agitation has been current for many years for the extension of the federal laws to the establishment of grades and qualities of different commodities. The lack of such established grades and standards of quality adds largely to the cost of distribution because of the necessity of buying and selling upon sample or otherwise, and because of the risk of fraud and misrepresentation, and consequently the larger margins in trading. It was considered by the department, however, that it would be better if such grades and qualities could be established voluntarily in the trades themselves instead of by legislation, and policed by trade associations as is the case in several old established trades.

To this end a number of conferences have been held in different branches of the lumber, textile, paper, and other trades. The service of the department has been to bring the different branches of the trade, the manufacturers, wholesalers, retailers, and representatives of larger consumers' associations together and to develop committees of different branches of trades. The plan has been generally welcomed and applications have been received from many trades for such assistance. The expert services of the bureau of standards, bureau of foreign and domestic commerce, and other bureaus of the department have been brought into service for technical advice in these matters, and results of important bearing upon the improvement of business ethics and cheapening of distribution have been attained.

Will Hold Invention and Patent Exposition

Announcement has been made of the first Universal Exposition of Inventions and Patents to be held at the Grand Central Palace, New York, Feb. 17-22, 1923. The object of the exposition is to bring the capital of America and the inventive brain of the world together and to give inventors opportunity to show the public, the manufacturer, and merchant, and the financier the possibilities for utility, business trade and commerce that lie in their inventions. Arrangements for the exhibition are being handled by the Universal Patent Exposition Corp., which has executive offices at 110 West Fortieth street, New York.

Enlarges Membership of Tariff Commission

Washington, Dec. 5.—To conduct the investigations made possible by the flexible provisions of the Fordney-McCumber tariff act and to meet the extra duties thrust upon the commission, the metals division of the United States tariff commission, of which Paul M. Tyler is chief, has been enlarged by the addition of two men and several more appointments are now in prospect.

The additions are F. M. Leonard, of New York, who is a graduate of the school of mines of the University of Minnesota, and W. J. Spencer, formerly of the navy department, Washington, who is a graduate of the school of mines of Columbia University. Mr. Leonard has had experience in South America and has specialized in the nonferrous metals. Mr. Spencer has done research work for the Midvale and Bethlehem companies and will devote himself to matters pertaining to finished steel products.

The Fordney-McCumber act has been operative since Sept. 21 but so far no sweeping investigations have been made nor have any marked reductions or increases in tariff duties been requested. The policy of the tariff commission thus far has been not to reveal specific applications. It is understood, however, that no outstanding demands have been made relative to iron and steel rates.

New Association Opens National Office

The Chemical Equipment association, comprising manufacturers of equipment essential in the chemical industry of the country, has established national executive offices at 1328 Broadway, New York. This organization which was formed Sept. 12, 1922 following preliminary activities of an organization committee of representatives of leading manufacturers, has begun active work through a national membership for the fostering of trade in chemical equipment and for the improvement of practices in the production and distribution of such equipment as well as performing the engineering services incidental thereto.

Officers of the association are: President, Pierce D. Schenk, president Duriron Co. Inc., Dayton, O.; vice presidents, J. George Lehman, vice president and general manager Bethlehem Foundry & Machine Co., Bethlehem, Pa.; Walter E. Lummus, president Walter E. Lummus Co., Boston; Adolph Coors Jr., vice president Coors Porcelain Co. Golden, Col.; treasurer, Percy C. Kingsbury, chief engineer, General Ceramics Co., New York; and secretary, Roberts Everett.

Buy Joliet Rolling Mills

Chicago, Dec. 5.—The rolling mill plant of Frederick Cowin & Co., Inc., Joliet, Ill., long known as the Joliet rolling mills, has been bought by Briggs & Turivas, Inc., Westminster building, Chicago. The plant includes a combination 8-inch and 12-inch finishing mill, a 12-inch and 16-inch finishing mill and a 22-inch muck bar mill. It has a capacity of 5000 tons per month of finished iron and steel bars. The plant is served by five railroads. The buyers have not decided whether to dismantle the plant or sell it.

Coal Mine Accidents Grow

Washington, Dec. 5.—Efforts of operators to meet the demand for coal, lowered morale of miners and their changed personnel because of the strike, and the seasonal hazard, are blamed by H. Foster Bain, director of the United States bureau of mines, for the record number of large disasters the bituminous coal mining industry has suffered in the three months following the termination of the strike. The bureau blames miners and mine managers for conditions that have cost the lives of 185 miners in three months, and it is urging great caution.

Steel Exports Show Slight Gain

October Tonnage Totals 131,542 Tons or an Increase of 3172 Tons Over September—Year's Aggregate Will Be Smallest Since 1914—1922 Volume Expected To Be Under 1921—Imports Awaited

IRON and steel exports from the United States in October gained 3172 tons over September, checking a decline which began in June. The October figure, 131,542 tons, is the second low tonnage of the year, comparing with 133,333 tons exported in January, and is more than 98,000 tons under the highest monthly total of the year, 229,616 tons, exported in May. Compared with October last year, the month's exports were greater by 26,353 tons.

Unless the two remaining months of the year, for which complete statistics will not be available until early in February, 1923, show an average export volume of approximately 227,000 tons each, the year 1922 will have the smallest export tonnage since 1914. To date the year's total is 1,697,978 tons. In 1914 the total was 1,549,554 tons. Last year the aggregate was 2,151,650 tons. The monthly average so far this year has been 169,798 tons. In order to meet the 1921 total, the individual monthly gain in November and December must show an average of 95,458 tons over October. This is not considered possible under the export conditions which have prevailed recently.

Individual items in October maintained a nip and tuck race with those of September, no single product standing out with an especially large gain or loss as compared with the earlier month. Losses were reported in pig iron, iron and steel bars, wire rods, plates, black sheets, tin plate, fabricated plates, railroad spikes, manufactures of wire, barbed wire, and nails. Gains were shown in scrap, semifinished steel, galvanized sheets, strips, hoops and bands, structural steel, rails, track fastenings and material, pipe, plain and galvanized wire, and bolts, nuts, rivets and washers, giving the month the net increase of 3172 tons.

Due to the necessary revision in compilations following changes in the tariff, import statistics for October, which will include the last eight days of September, are not yet available but are expected to be ready in the next few weeks.

Concerning the delay in import statistics, the department says:

> Lack of help and proper equipment, unfamiliarity of the clerks with the new import classification and defective entries are given by the treasury department as the reasons for the delay. More or less delay in the statistical reports has always followed tariff revisions, but never as serious as at this time. Under ordinary conditions, the figures as compiled by the treasury department are furnished to the department of commerce in time for release between the 10th and 15th of the month following the one to which the statistics relate.
>
> Anticipating increased work as a result of the new tariff, the department of commerce some months ago urged that more clerks and equipment be made available. As a result, 40 additional clerks and extra mechanical equipment amounting to $50,240 was authorized by the treasury department. Limited appropriations necessitated reduction of this sum to $35,000. None of the additional clerks authorized has yet been employed on account of lack of space in the offices occupied by the bureau of customs statistics.
>
> This has been the subject of extended conferences and correspondence between the treasury and commerce departments for several years. Recently, as a result, the treasury department agreed that its bureau of customs statistics, which carries on the work, should be transferred from the treasury to the commerce department. The department of commerce would then be in a position to ask congress for sufficient money to keep the statistical reports up to date and to bring the service up to the standard demanded by business interests for whose benefit the statistics are published. A bill to that effect is now before congress. It passed the senate during the last session, was favorably reported upon by the committee on ways and means and is now pending in the house of representatives.

IRON AND STEEL EXPORTS
Gross Tons

	October 1922	October 1921	Ten months ending October 1922	Ten months ending October 1921
Pig iron	1,553	2,723	24,320	23,524
Scrap	4,510	3,276	59,872	30,477
Semifinished steel*	8,364	153	105,949	8,244
Iron and steel bars†	14,244	5,961	200,667	179,656
Alloy steel bars	292		4,700	
Wire rods	1,180	1,330	37,696	13,305
Boiler plate	88	15,301	11,495	318,666
Other plates	4,215		69,063	
Galv. sheets	7,519	3,060	96,220	48,629
Black sheets, steel	6,256	20,931	204,159	122,121
Black sheets, iron	452	(a)	9,971	(a)
Cold rolled strips	426	1,673	4,424	17,466
Hoops, bands and scroll	2,544		23,504	
Tin and terne plate	6,324	5,504	66,228	90,176
Fabricated plates‡	174	542	2,613	9,248
Struct'l steel, plain	6,566	10,587	48,807	276,595
Struct'l steel, fabricated	1,630		17,026	
Other struct'l forms	1,792		19,094	
Rails, over 50 pounds	17,070	9,976	216,701	292,138
Rails, under 50 pounds	3,132		23,960	
R. R. spikes	398	462	6,439	7,426
Track fastenings and material	3,149	(a)	24,264	(a)
Boiler tubes	904	12,865	9,780	320,468
Casing and oil line pipe	5,422		42,047	
Welded black pipe	5,193		63,003	
Welded galv. pipe	2,664		26,767	
Malleable iron pipe fittings	817	1,953	6,892	44,846
Cast iron pipe	1,839		15,020	
Cast iron pipe fittings	790		7,128	
Plain wire	2,985	2,087	25,940	60,371
Galv. wire	5,909		70,006	
Barbed wire	6,531	3,621	60,858	26,161
Manufactures of wire	1,845	(a)	21,809	(a)
Cut nails	138	262	3,160	912
Wire nails	2,130	1,805	48,966	21,011
Other nails incl'd'g tacks	409	311	4,172	4,061
Bolts, nuts, rivets and washers	1,888	896	15,258	22,223
Total	131,542	105,189	1,697,978	1,937,724

*Include ingots, blooms, billets, slabs, sheet and tin plate, bars and skelp.
†Includes rods other than wire, and light structural forms.
‡Ship and tank plates punched and shaped.
(a) Formerly by value.

FERROALLOY EXPORTS
Gross Tons

	October 1922	October 1921	Ten months ending Oct. 1922	Ten months ending Oct. 1921
Ferrosilicon	78	97	444	318
Ferromanganese	5	10	1,059	614
Spiegeleisen	..	..	289	...
Ferrovanadium	1	5	21	91
Total	84	112	1,173	1,023

CASTING AND FORGING EXPORTS
Gross Tons

	October 1922	Ten months of 1922
Malleable iron	127	1,074
Other iron	579	7,172
Car wheels and axles	1,283	13,914
Shells and projectiles, empty	1	169
Steel castings	192	1,737
Forgings	114	1,849
Total	2,296	25,915

Test Strength of Ore

Washington, Dec. 5.—Iron ore in general will sustain loads up to 10,000 pounds per square inch but that is the limit of safety, states the United States bureau of mines as the result of tests being made at the southern experimental station of the bureau on the subject of support in iron ore mines. The object of the preliminary work was to determine the size of test cubes most suitable for obtaining the ultimate strength of the ore and to obtain more definite information concerning the failure of ore under crushing loads.

Following the action of the stockholders of the Scovill Mfg. Co., Waterbury, Conn., in voting to increase the capital stock from $10,000,000 to $15,000,000, the directors voted to declare a stock dividend of 200 per cent.

Steel Works Leased by Darlington Company

Middlesbrough, Eng., Nov. 28.—The extensive iron and steel works at Skinningrove, near Middlesbrough, with the sea wharf, have been leased to Pease & Partners Ltd., Darlington. This company has had a large interest in the Skinningrove Iron Co., Ltd., for some time.

The authorized capital of Pease & Partners is £3,000,000, of which £2,186,399 has been subscribed and paid up. Since the company was registered in 1898 it has taken over the collieries of the South Durham Coal Co.; acquired control of the Normanby Ironworks Co. Ltd.; the undertaking of the Tees Bridge Iron Co. Ltd.; T. and R. W. Bower Ltd.; Henry Stobart & Co., Ltd.; the North Bitchburn Coal Co.; and Witton Fire Brick Co., Ltd.

The Skinningrove plant includes five blast furnaces, with an average daily capacity of 125 tons, one 250-ton and two 100-ton open-hearth furnaces, a 36-inch blooming mill and a 36-inch electrically driven shape mill.

Republic Earnings Gain

John A. Topping, chairman of the Republic Iron & Steel Co., replying to questions regarding rumors that his company plans to do some financing, has declared if the company concludes to take any such action in the future it will be for the purpose of financing some constructive or building program. He said that the company was not in need of funds for other purposes, its net quick assets being now in excess of $15,000,000. Furthermore, that with the settlement of the coal and railroad strikes and the resumption of normal operations, resulting earnings have been at a rate well in excess of the preferred dividend requirements.

Steel Foundry To Open

Production of steel castings and alloy steels is expected to start by March, 1923, in the new plant of the Blackwood Electric Steel Corp., Parkersburg, W. Va. The company, recently organized, plans to produce 300 tons monthly. Alexander Blackwood, who is to be president and general manager, has resigned from the Farrell Cheek Foundry Co., Sandusky, O., as general manager, effective Jan. 1, or earlier if his successor is obtained. Mr. Blackwood is a pioneer in the manufacture of high grade steel castings. The vice president and sales manager of the new company will be B. D. Thomas who has resigned as general manager of sales of the Acme Steel Co., Glassmere, Pa. Mr. Thomas began his iron and steel experience with the American Car & Foundry Co. at St. Louis at an early age, remaining with that company until at the outbreak of the war, he went to the ordnance department in charge of the Pittsburgh division of shell inspection. At the close of the war he went to the Acme company. Edgar M. Lewis, who will be identified with the Blackwood company in an executive capacity, has resigned from the J. C. McCormick Co., Pittsburgh. Mr. Lewis long has been identified with the foundry supply field, having had important connection with the Hill & Griffith Co., Cincinnati, and the E. J. Woodison Co., Detroit.

Wills in Receivership

Receivership for the C. H. Wills & Co., Marysville, Mich., has resulted from agreement with bankers and major creditors as a means of rehabilitating the company which is solvent, and placing it upon a strong financial basis, according to a statement by C. Harold Wills, president of the company. Operation of the plant will not be interrupted, it is announced. The company was organized in July, 1920, as a Delaware corporation and began production of the Wills-St. Claire automobile in January, 1921. Wills formerly was chief engineer for the Ford Motor Co. The Security Trust Co., Detroit, has been named receiver in the court action.

Leases Bar Mill

A lease of the bar mill of the Central Steel Co. at Ottawa, Ill., has been taken by the Alliance Steel Co., 20 West Jackson boulevard, Chicago, and rolling of iron and steel will begin about Dec. 15. This plant is equipped with a 9-inch bar mill and the new company will produce open hearth and bessemer bars, forging bars, reinforcing bars, and light angles and channels. The plant has been idle for several years.

Will Operate File Works

Effective Dec. 1 the management of the Madden File Works which has been operated at Middletown, N. Y., since 1857 will be taken over by the R. H. Madden Co., Inc., succeeding the Madden & Morrison File Co. The company will continue to manufacture files and rasps as its main products. Officers of the R. H. Madden Co., Inc., are: President, R. H. Madden; vice president, Z. Edward Van Fleet and secretary-treasurer, Charles W. Moore.

Improved Conditions

Noted in Coke By-Products Market—Prices Remain Unchanged

New York, Dec. 5.—Improved production and a slight betterment in transportation conditions are making for easier supplies of coal tar by-products. However, due to the continued large amount of 90 per cent benzol being produced, toluol and solvent naphtha remain scarce. Prices are unchanged as follows: pure benzol, 30 cents ovens in tanks, and 35 cents in drums; 90 per cent benzol, 27 cents in tanks and 33 cents in drums; toluol 30 cents in tanks and 35 cents in drums; solvent naphtha, 27 cents in tanks and 32 cents in drums; commercial xylol, 26 cents in tanks, and 34 cents in drums, and pure xylol, 30 cents in tanks, and 35 cents in drums.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants in Tank Lots

Pure benzol	(nominal)	$0.30
Toluol	(nominal)	0.30
Solvent naphtha	(nominal)	0.27
Commercial xylol	(nominal)	0.29

Per Pound at Producers' Plants

Phenol	(nominal)	$0.22½
Naphthalene, flake		0.06 to 0.07
Naphthalene, balls		0.07 to 0.08

Per 100 Pounds at Producers' Plants

Sulphate of ammonia.....$3.00 to $3.05

Contract

Pure benzol	$0.30
Toluol	0.30
Solvent naphtha	0.27
Commercial xylol	0.29

Per Pound at Producers' Plants

Phenol	(nominal)	$0.22½
Naphthalene, flake		0.06 to 0.07
Naphthalene, balls		0.07 to 0.08

Per 100 Pounds at Producers' Plants

Sulphate of ammonia (12 months).....$3.00 to $3.05

A fair demand for sulphate of ammonia continues to come from the South, although the western and northern sections of the country are displaying little interest. Prices are unchanged at $3 to $3.05, works, on domestic business and $3.55 to $3.60 port, in double bags on foreign.

Trading in naphthalene is progressing at a good rate at 6 to 7 cents per pound, works, for flakes, and 7 to 8 cents for balls. Phenol sellers are well sold up over the end of the year, with the result that asking price of the leading sellers of 22½ cents is largely nominal.

A petition in bankruptcy has been filed against the Northwestern Iron Works, Inc., 195 Douglas street, Brooklyn, New York. Judge Garvin has appointed John B. Johnston receiver.

Coal Bill Too High, Says Hoover

Cost of Bituminous Fuel Consumed by Nation Would Be One-Third Less if Industry Were Stabilized, Secretary Tells Congress — Miners, 40 to 60 Per Cent Employed, Want Living Wage—Over-Expansion the Cause

WASHINGTON, Dec. 5.—Stabilization of the bituminous coal industry would cut the nation's coal bill one-third, declares Secretary of Commerce Hoover in his annual report to congress. The blame for instability is laid by him largely at the door of over-expansion and intermittent operations. Relief can be effected, he believes, "if there were ample transportation at all times, if there were greater freedom from strikes by better development of employment relations, and if there were storage to overcome some part of the seasonal character of the industry."

Secretary Hoover also warns that "owing to the stoppage of immigration the ranks of the miners will soon be very difficult to recruit unless there can be an economy in labor through less lost time."

Prefacing his report with the statement that the highly unstable functioning of the bituminous industry resulted in the worst strike in history and there can be no remedy until the primary causes have been fully analyzed and reated, Secretary Hoover says:

"Our bituminous coal fields are of enormous extent and the capital required to open new mines is comparatively small. There are apparently over 8000 bituminous mines with an annual capacity of about 850,000,000 tons, or about 300,000,000 tons beyond our present normal national needs. The normal demand, if spread evenly over the year, would be about 10,000,000 tons per week. It varies actually from 7,500,000 tons to 12,000,000 tons per week at different seasons of the year. The total capacity of about 16,000,000 tons per week is 4,000,000 over the maximum demand. We need a reserve capacity for the ebb and flow of business tides, but 12,000,000 per week would give 620,000,000 tons per annum, an ample supply.

"The overexpansion of the industry is to a considerable degree due to:

"(a) Annual shortage of cars and consequent scarcity, with temporary high price levels and large profits; periodic strikes and threats of strikes creating congested demand with consonant periodic high prices and profits. These high profit periods induce speculative expansion of the industry.

"(b) War demand and profits.

"(c) Two-thirds of the industry is unionized and one-third is nonunion. The frozen wage over long periods in the union field enables the nonunion field to undercut wages in competitive periods and thus secure more continuous operation. There is, therefore, a constant expansion in nonunion fields with increasing intermittency in union fields.

Mines Are Organized

"The worst effect of over-expansion is its by-product of labor waste and partial underpayment of labor and its necessary unrest, because the over-capacity of the industry results not in the permanent closing of some mines but in the operation of all of them more or less intermittently. Thus the working personnel is held attached to each mine in daily hopes of employment. Entirely outside of strike suspensions, our preliminary investigation shows that in the best of recent years the bituminous mines operated only about 249 days out of a possible 308; whereas in most years the average is about 210, as against about 295 days in England and over 300 days in Germany. If we subtract the mines which are operating regularly for certain metallurgical and railways supplies, we will find that the situation is even worse, for the remainder of the bituminous mines are probably operating an average of less than 180 days (more than 120 days' lost time out of the year), and this entirely outside of the loss of time due to national strikes. Nor is this all of the situation, for some mines operate less than 100 days. The perpetual labor difficulties are in large degree the result of a constant struggle for such remuneration, based upon day's pay and piece rates, as will give a standard of living to that portion of the men who are employed from 40 to 60 per cent of their time. A large minority of workers are thus honeycombed with the discontent that arises from the worst stimulant to unrest—insecurity of employment and part-time employment.

"Another factor is the somewhat seasonal character of the industry, which can only be cured by storage. Heating requirements are responsible for a considerable part of this seasonal demand, but storage by heating consumers is impracticable. The most constructive storage would come from public utilities and railways, which would result in giving a larger proportion of production to the heating consumption during cold weather.

"Minor vicious cycles originate from the periodic shortage in transportation. The more favorable prices to railways than to the public follow from the railways' ability to assure cars. The necessary regulations for equal car distribution and the consequent division of business, between high cost and unsystematic mines, result at once in prices that keep the high cost mines alive. The industrial community bears the major part of the cost of maintaining an industry 30 per cent over-expanded and overmanned. And it bears even a larger cost from the dangers of interruption, due to national strikes and to the uncertainty of coal prices, that vary as much as 300 per cent annually. Fully one-third of the national coal bill would be eliminated by a stable industry."

The federal coal fact finding commission, set up by congress to suggest a remedy for evils such as Secretary Hoover points out, has sent to all bituminous coal operators the questionnaires which will largely form the basis of the commission's ultimate recommendations. The questionnaires are a modification of the federal trade commission's questionnaire of 1918. When sent out by the trade commission as a part of its cost reporting campaign the bituminous operators went into court and obtained the Maynard injunction, which still holds. The National Coal association, whose membership opposed the trade commission, has been actively co-operating with the fact finding commission and so far no objections to submitting cost data have been raised.

Will Dismantle Mill

The rolling mill plant of the American Car & Foundry Co. at Clark and Jefferson streets, Detroit, has been purchased by the Burt D. Howe Co., Detroit. The equipment consisting of a 16-inch bar mill, engines, boiler, etc., will be sold. Such machinery as cannot be marketed in this way will be scrapped. The rolling mill plant was built in 1877 and reconstructed in 1892 after a fire. It consists of four heating furnaces and of a 16-inch 3-high bar mill. Its annual capacity is 90,000 tons of steel bars and 500 tons of drill rods.

Would Sell Forge Plant

Application has been made to the federal court by Francis W. Treadway, receiver for the Forest City Machine & Forge Co., Cleveland, for permission to sell the company's factory and land. An offer of $200,000 has been presented, the court was informed.

H. P. Spilker has been appointed temporary receiver of the Pittsburgh Saw & Mfg., Co. Pittsburgh. The company is bankrupt.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields

JAMES E. Strong has been elected vice president in charge of operations of the Alabama Co., Birmingham, Ala. He has been chief engineer and general superintendent of the company. His promotion follows changes made a few weeks ago when Harry W. Coffin resigned as vice president and general manager and J. W. Porter, vice president and general sales manager, was elected to succeed Mr. Coffin.

A. A. Garver has taken the position of general superintendent of the Empire Rolling Mill, Cleveland, moving to that city from Ashland, Ky.

R. C. Jerome has resigned as vice president and general manager of the Jerome-Edwards Metallic Packing Co., Chicago.

E. O. Smith, secretary and foreign representative of the Universal Winding Co., Auburn, R. I., sailed Nov. 28, for a tour of the world.

H. C. Matlack has been elected president of the Matlack Coal & Iron Co., Inc., 44 Beaver street, New York; A. F. Kempe has been elected vice president and G. Walter Bates, secretary and treasurer.

J. Leonard Replogle, chairman of the Replogle Steel Co. and president of the Vanadium Corp. of America, has been elected a director of the Wickwire Spencer Steel Corp., Buffalo and Worcester, Mass.

D. S. Messinger, New York representative of the Wickwire-Spencer Steel Corp., Worcester, Mass., and Buffalo, has resigned to take a similar position with the Hamblin & Russell Mfg. Co., Worcester, maker of wire goods.

Fred E. Gibbons, who recently resigned as secretary of the W. & B. Douglas Co., Middletown, Conn., maker of pumps, concluded his services Nov. 29, when he rounded out over 50 years in the company, the last 15 of which as secretary.

J. W. Dowling, Bessemer building, Pittsburgh, has been appointed agent for the Big Savage Fire Brick Co., Frostburg, Md. He is also agent for the Superior Silica Brick Co., Port Mathilda, Pa., and the Kentucky Fluorspar Co., Marion, Ky.

C. C. Sundmacher, for 15 years sales representative for the coke department of Pickands, Brown & Co. in Wisconsin, has become sales representative for the Chicago territory for the United Coke & Coal Co., 814 Fisher building, assuming his duties Dec. 1.

C. M. Hartzell and W. W. Davidson, for a number of years identified with the manufacturing and foundry industries in Ohio, have been appointed Ohio representatives of the George Oldham & Son Co., Baltimore, manufacturer of pneumatic tool equipment, and have opened offices at 608 National building, Cleveland.

Charles M. Fitch, for several years manager of the Falls Motors Corp., Sheboygan Falls, Wis., automobile engines, has resigned and has taken a position with the Nordyke & Marmon Co. of Indianapolis, in general charge of the large automobile body manufacturing plant it is building.

G. A. Sawin, assistant to the manager of the supply department of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has been elected chairman of the committee on instruments and measurements of the American Institute of Electrical Engineers. He has been a member of the committee since 1920.

James M. Hill, formerly connected with the Canton Sheet Steel Co., Canton, O., has been named general manager of the new sheet mills of the Weirton Steel Co. at Weirton, W. Va., to take charge about Jan. 1. He has been for some time employed in an official capacity with the Apollo Steel Co. at Appollo, Pa. At one time he was with the Reeves Mfg. Co., Dover, O.

J. R. Hussey, formerly machinery salesman for the Brown & Zortman Machinery Co., Pittsburgh, has become affiliated with Manning, Maxwell & Moore, Inc., Park building, Pittsburgh, in a sales capacity. H. F. Nickerson has been transferred from the Pittsburgh office of Manning, Maxwell & Moore, Inc., to be office manager at Cleveland. The company is re-opening its Cleveland office in the Huron-Sixth building.

Sir Robert Horne who has held various high positions in the British government, including president of board of trade and chancellor of the exchequer, has been appointed a vice chairman of the Welsh steel firm, Baldwins, Ltd. This company is said to be the largest manufacturer of iron and steel in Great Britain and one of the largest in Europe. The main offices, where Sir Robert will have his headquarters, are at 33 St. Mary Axe, London, E. C. Sir Robert Horne has been associated with large business enterprises in Great Britain for many years.

T. B. Reid has been appointed vice president and sales manager of the Joliette Steel Products, Ltd., Joliette, Que. His office is at 115 Union Trust building, Toronto. Mr. Reid in 1906 went to the A. R. Williams Machinery Co., assuming charge of the machine tool department. He remained in this capacity until 1917, when he became secretary-treasurer and manager for the A. R. Williams Machinery & Supply Co., Buffalo and Detroit, with his headquarters in Buffalo. He remained there until 1921. Since his return to Canada, he has been connected with the machinery sales end for equipment made by the Canadian General Electric Co. and the Russell Motor Co.

Sir Philip Nash has been appointed chairman of the Metropolitan-Vickers Electrical Co., Manchester, England, formerly the British Westinghouse Co. He succeeds J. Annan Bryce who has resigned after 20 years' service on account of ill health and advancing age. Sir Philip Nash, who is 47, is an engineer. He filled the post of chief locomotive engineer to the Great Northern railway from 1897 to 1899 and then spent 15 years in the service of the East Indian railway. Returning to England in the first year of the war, he was appointed director of national filling factories under the ministry of munitions, and in 1916 became first deputy director general and later director general of transportation to the British forces in France.

Will Reward Service in Electrical Field

By action of the board of directors, the General Electric Co., Schenectady, N. Y., has set aside a fund of $400,000 to be known as the Charles A. Coffin Foundation, the income from which, amounting to approximately $20,000 per year, will be available for encouraging and rewarding service in the electrical field by giving prizes to its employes, recognition to lighting, power and railway companies for improvement in service to the public and fellowships to graduate students and funds for research work at technical schools. This foundation was established as a tribute to Charles A. Coffin who last May in his seventy-eighth year retired from active leadership of the company.

The foundation will be controlled by a committee appointed by the board. This committee, within the limits of the purposes of the foundation, will have power to change the conditions applicable to the distribution of the fund and the amounts for each particular purpose. Prizes totaling $11,000 will be given for the most signal contributions by employes of the company toward the increase of its efficiency or progress in the electrical art. Foremen's prizes are to be awarded for the best department, taking into account its appearance, efficiency of operation and conditions which add to the better conduct of the work and welfare of the employes.

A gold medal, to be known as the Charles A. Coffin medal, will be awarded annually to the public utility company in the country which during the year has made the greatest contribution towards increasing the advantages of the use of electric light and power for the convenience and well-being of the public and benefit of the industry. The company receiving the medal also will receive $1000 for its employes' benefit or similar fund. A similar medal, will be awarded annually to the electric railway company in the country which during the year has made the greatest contribution towards increasing the advantages of electric transportation for the convenience and well-being of the public and the benefit of the industry.

Fellowships to the amount of $5000 are to be awarded annually to graduates of American colleges who by the character of their work and the recommendation of the faculty of the institution where they have studied, could with advantage continue their research work here or abroad; or some portion or all of the fund may be used to further the research work at any of the colleges in the country. The fields in which these fellowships and funds for research work are to be awarded are electricity, physics and physical chemistry. Awards of the various prizes, medals and fellowships will be made by the members of the foundation committee, assisted by representatives of various technical societies and organizations.

Beehive Ovens Producing More Coke

Coke produced in beehive ovens in the week ended Nov. 25 totaled 285,000 tons, according to estimates of the United States geological survey, as compared with a revised total of 264,000 tons in the week before. The revised total is an increase of 3000 tons over the estimate for the week ending Nov. 18. The production of 285,000 tons represents a daily average of 48,000 tons. The daily average in the earlier period was 44,000 tons. Production of beehive coke to date is 6,598,000 tons for 1922 as compared with 4,936,000 tons at the same time last year. The weekly output by states is as follows:

	Week ended Nov. 25, 1922	Nov. 18, 1922	Nov. 26, 1921
Pennsylvania and Ohio	220,000	203,000	85,000
West Virginia	24,000	21,000	6,000
Alabama, Tennessee, and Georgia	17,000	18,000	8,000
Virginia and Kentucky	13,000	11,000	7,000
Colorado and New Mexico	6,000	6,000	2,000
Washington and Utah	5,000	5,000	2,000
United States total	285,000	264,000	110,000
Daily average	48,000	44,000	18,000

"Production of beehive coke in the week ended November 25 showed a gain of 8 per cent over that in the preceding week," says the weekly report. "Increases were reported from the Pennsylvania-Ohio, West Virginia and Virginia-Kentucky districts. According to the *Connellsville Courier*, the output in the Connellsville region increased from 182,380 tons to 201,100 tons, a record higher than that for any week since the first of 1921.

Coal production in the week ended Nov. 25 declined slightly from the week before, totaling 11,038,000 tons as against 11,215,000 tons in the week ended Nov. 18. The daily average for the week was 1,840,000 tons, or 29,000 tons under that of the earlier period. Production so far this year is 354,990,000 tons as against 370,181,000 tons in the same period of 1921.

Hoover Says Outlook Is Vastly Improved

Washington, Dec. 5.—"The outstanding feature of the fiscal year (July, 1921, to July, 1922) was that it marked the low point in the most violent commodity slump in our history," says Secretary of Commerce Herbert Hoover, in his annual report. "The liquidation and deflation precipitated the commercial community into all the losses and unemployment that flow from such occasions. It was inevitable that we, in common with the rest of the world, should readjust ourselves not only from the inflated levels of the war but also from the still higher levels of the wasteful post-war boom. During the 12 months prior to the year under review both prices and manufacturing production outside of foodstuffs fell by, roughly, 40 per cent, and in consequence some 4,000,000 to 5,000,000 people were unemployed and business stagnated. The only marked exception to this ratio of decreased activities was the quantitative volume of foreign trade.

"Our recovery has been marvelously rapid, for within 16 months following the bottom of the slump unemployment was practically extinguished and production was proceeding up to between 85 and 95 per cent of our normal. We have entered into a period of lower and more stable prices with its consequent much sounder and more stable business. The tremendous shock of the slump together with the aftermath of the war will require some time yet for complete recovery, and speculation is in no way justified.

The readjustments are still unequal in price levels between various commodities and between wage earners and farmers. Nevertheless the outlook is greatly improved over a year ago.

Obituaries

Francis Wood Carpenter, president of the Congdon & Carpenter Co., Providence, R. I., dealer in iron, steel and sheet metal, since its incorporation in 1892, died at his home in that city, Dec. 1, aged 91 years. He had been identified with the business since a boy, starting in as an apprentice after leaving school. He was also for many years president of the Rhode Island Perkins Horse Shoe Co.

Frederick G. Niedringhaus, former president of the National Enameling & Stamping Co., and one of the founders of Granite City, Ill., died recently at his home in St. Louis at the age of 86 years. He was born in Germany in 1837 and at the age of 18 went to St. Louis. The next year he joined his brother William F. Neidringhaus in the tinware business which they later incorporated as the St. Louis Stamping Co. and which in 1899 became the National Enameling & Stamping Co. Nine years later Mr. Niedringhause retired as president.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

MERGER of the Cleveland Drop Forge Co. and the Columbian Hardware Co. under the name of the latter company is announced by H. F. Seymour, president of the hardware company. The Cleveland Drop Forge Co. formerly was the Cleveland plant of the Wyman-Gordon Co. and a short time ago sold its works at 3803 Superior avenue, Cleveland, to the W. S. Tyler Co. which adjoins. The machinery and equipment of the drop forge company will be moved to the Columbian plant at Lakeside avenue and East Fifty-third street where the combined equipment will consist of 35 producing hammers and two headers. The Columbian company, which recently was purchased by Mr. Seymour from the Consolidated Iron & Steel Co., with which it was merged a few years ago, manufactures drop forgings, vises, anvils, small tools, etc.

* * *

PURCHASE of a 3-ton Moore-type electric furnace for its new steel foundry has been made by the Bonney-Floyd Steel Foundry Co., Columbus, O., from the Pittsburgh Electric Furnace Corp., Union Bank building, Pittsburgh.

* * *

REORGANIZATION of the Hoover Suction Sweeper Co., North Canton, O., as the Hoover Co., is to be effected following an increase in the company's capitalization from $2,000,000 to $6,000,000, according to W. H. Hoover, general manager. The company, which has been manufacturing suction sweepers since its organization, is to manufacture other household labor saving appliances such as clothes and dish washing machines, mangles, refrigerating machinery, etc.

* * *

A PUBLISHED report that the Wickwire Spencer Steel Corp., Worcester, Mass., is to transfer the screen wire cloth department of the Wright Works at Worcester to the Blue Island, Ill. plant of the American Steel Fabrics Co. which recently took over, is incorrect, it is stated officially. It is not intention of the company to move or disband any of the plants of this character at Worcester and the screen wire cloth production at Worcester will be carried forward as in the past.

* * *

WHOLESALE business exclusively now is being handled by the Salt Lake Hardware Co., Salt Lake City, which on Dec. 1 closed out its retail business. Main offices of the company are being conducted in the wholesale building. No change has been made in the conduct of the branch house at Pocatello, Idaho. The company is jobber of iron and steel, pipe, metals, heavy hardware, machinery and supplies, tools, belting, electrical supplies, builders hardware, stoves and ranges, fencing, engines, boilers, hoists, etc. H. A. Schweikhart is vice president and general manager.

* * *

THE pump department of the Eclipse works of Fairbanks, Morse & Co. at Beloit, Wis., will be moved at once to the company's works at Three Rivers, Mich., it is announced by W. C. Heath, general manager. This is being done to clear the way for devoting the entire capacity of the Beloit plant to the manufacture of internal combustion engines of various sizes and capacities for industrial, commercial and argricultural purposes. It was with this development in view that Fairbanks, Morse & Co. have recently built one of the largest foundries in the United States at Beloit.

* * *

REMODELING of the plant of the Grether Fire Equipment Co., Dayton, O., is contemplated by the company to care for its growing requirements. The company, which recently was incorporated for $75,000, has been in operation manufacturing fire fighting and safety appliances at 312-314 East Second street, Dayton. The company plans to manufacture a new line of fire fighting tools and specialties. Officers of the company are: President and sales manager, William G. Grether; vice president and general manager, Fred E. Grether; and secretary and treasurer, I. N. Harris.

* * *

COMPLETION of a new plant, replacing the one destroyed by fire in March this year, is announced by the Union Iron Works, Erie, Pa., manufacturer of steel boilers. The plant is one of the most modern in the country and is equipped with facilities for light or heavy work. In addition to boilers, the company fabricates tanks, stacks, and other plate work. Branch offices are maintained in New York, Boston, Philadelphia, Cleveland, Chicago, St. Louis, Toledo, Pittsburgh, Indianapolis, Syracuse, N. Y., Buffalo, Charlotte, N. C., Kansas City, Mo., Sherman, Tex., El Paso, Tex., San Francisco, Portland, Oreg., and Mexico City. Officers of the company are: President, F. F. Curtze; vice president and general manager, George W. Bach; treasurer, E. E. Knobloch; and secretary, E. H. Brevillier.

* * *

DAYTON Steel Foundry Co., Dayton, O., has recently ordered a 3-ton Moore electric furnace from the Pittsburgh Electric Furnace Corp., Pittsburgh, for installation in its steel foundry. The old furnace equipment is not sufficient to take care of the company's enlarged business.

* * *

CONSTRUCTION of a new building 77 x 393 feet for the Belle City Malleable Iron Co. at Racine, Wis., is intended for its annealing department only. The company is erecting a continuous annealing kiln in the building which will give it a considerably increased capacity. The necessary equipment has already been purchased for this improvement, according to C. S. Anderson, general manager. The company, with the affiliated Racine Steel Castings Co., produces malleable iron castings, railroad specialties, refined electric steel castings and carbon and alloy steel ingots.

* * *

IMPROVEMENTS and addition to the plant of the Rabe Pipe & Foundry Co., Chattanooga, Tenn., are to be completed early in January, according to present plans of the company. The new development at the sewer pipe works consists of an addition 100 x 150 feet, increasing the length to 400 feet. The present capacity of the company is 1200 tons per month and the addition will increase it to 1500 to 1700 tons. The plant is now operating to capacity, filling orders booked for points in the United States, South America and the Hawaiian islands.

November Tool Demand Was Fair

Large Orders Were Lacking but Total Volume of Business Was Up to That of October—Prospective Orders Are Large—Prices Are Advancing—Some Large Conveying Equipment Orders Were Placed

WHILE the volume of machine tool business during November was not large there has been no apparent drop in demand as compared with the preceding month's orders and in some districts it appears as though buying has been slightly heavier. However, orders have been far from satisfactory. The railroad interests and the automotive industry appear to have furnished the bulk but toward the close of the month even this business tapered off. It is apparent equipment users, while in need of additional machinery, do not contemplate making large purchases until after the inventory season. This is the rule rather than the exception at this time of the year, even when demand is enormous. Despite the lack of orders single unit orders have been so numerous that machine tool builders have increased operating schedules, and the market today, probably is on a firmer basis than at any time in the past two years.

Railroads Still Placing Orders

RAILROAD purchases during the past few months have been fairly sizable and orders from this source were included in November business. Some of the roads to place orders during the month were the Pittsburgh & Lake Erie, the Missouri, Kansas & Texas, Chicago & Northwestern, Pere Marquette and the Virginian. In addition, a number of interests, which up to this time have been engaged in business foreign to the railroad field have entered the car and locomotive repair business and as a result have furnished considerable orders for heavy machine tool equipment. Some of these latter interests are the Merchant Shipbuilding Co., Bristol, Pa., the Crucible Steel Co., Harrison, N. J., the Bethlehem Steel Co., Bethlehem, Pa., and the Minneapolis Steel & Machinery Co. This is an interesting phase of the equipment market and further business from this source is expected. In addition, regular locomotive and car builders have placed some business, including the American Locomotive Co., the Baldwin Locomotive Works, and the Lima Locomotive Works.

Industrial Demand For Single Tools

GENERAL industrial demand has been fair. Buyers of size have included the Standard Tool Co., Cleveland, the Grabler Mfg. Co., Cleveland, the Hoover Suction Sweeper Co., Canton, O., the National Screw & Tack Co., Cleveland, the Pittsburgh Steel Co., Pittsburgh, the Lehigh Portland Cement Co., Allentown, Pa., the Toledo Automatic Brush Machine Co., Toledo, O., the General Electric Co., Lynn, Mass., and the Tebo Yacht Basin Co., Brooklyn, N. Y. Industrial demand of the past few months has been small, principally due to the fact many interests were not in a position to close on additional equipment although they were in dire need of it. Secondhand machinery has been purchased when evasion of buying was no longer possible, and while industry generally is on a sounder basis than it has been in many months, it is not likely new machine tools will be purchased while there still are good used machines available. However, prospective demand, especially in single machines is enormous, although it is not thought all of the equipment inquired for will be purchased. Prospective buyers include the Gopher Machine Mfg. Co., New Prague, Minn., the Lombard Governor Co., Ashland, Mass., the General Electric Co., Lynn, Mass., the Dayton Engineering Laboratories, Dayton, O., the American Rolling Mill Co., Middletown, O., the Springer Lock Mfg. Co., Belleville, Ont., the Ideal Electric & Mfg. Co., Mansfield, O., the National Forge & Tool Co., Irvine, Pa., and the Bahde Mfg. Co.

Automobile Industry Furnishes Demand

BUYING by the automotive industry has not been as active as it has been, but still considerable business, especially in tools for replacement purposes, developed from this source. Some machine tool builders and dealers have for some time been predicting a slump in automobile business, and now are considering the present automobile demand as "remarkable." However, it is apparent there is no saturation point in automobile demand, and orders for automobiles hinge simply upon the development of good roads and lower prices. Some automotive interests to enter the machinery market during November were the Electric Auto Lite Corp., the Chevrolet Motor Car Co., the Ford Motor Co., the Studebaker Corp., the International Harvester Co., Stewart-Warner Speedometer Corp. and the Continental Motors Corp. Prospective tool demand in the automotive field, while not exceptionally large, being principally for tools for replacement purposes, is fair.

Equipment Prices Are Advancing

MACHINE tool prices continue to advance. Effective Dec. 1 a number of makers have announced prices for their products will be on a higher level. Rising production costs and a growing scarcity of labor is forcing this action although makers generally are doing everything in their power to keep prices down. However, under present conditions, this is impossible and it is more than likely even higher prices will be in effect before next summer, a steady advance being anticipated. Some of those to announce higher prices are Foster Machine Co., Elkhart, Ind., Warner & Swasey Co., Cleveland, Boye & Emmes Co., Cincinnati, the Walcott Lathe Co., Jackson, Mich., and the E. W. Bliss Co., Brooklyn, N. Y.

Crane and Hoist Orders Are Small

PUBLISHED crane and hoist awards in IRON TRADE REVIEW in November totaled 117 which compares with 128 in October; inquiries in November totaled 59 which compares with 63 in the preceding month. Crane business on the whole was dull. However, some exceptionally large business was placed including the awarding of 41 cranes for the proposed Gary tube works of the National Tube Co., Pittsburgh. This business was divided between the Alliance Machine Co., Alliance, O., and Manning, Maxwell & Moore, Inc., New York. The Alliance company during the month also received another large contract. This was from the Virginian railroad and involves the building of a mechanical coal handling pier at Norfolk, Va., which will be the largest installation of its kind in the world. The total investment is estimated in excess of $1,000,000. Other crane and conveying equipment awards were small but prospects are that the new year will see a much heavier demand for this class of equipment than was the case this year.

Railroad Tool Buying Is Heavy

Pennsylvania and Chicago, Burlington & Quincy Place Equipment Orders—Other Buying Is Small—Prospective Demand Large—Tool Prices Advancing Despite Small Demand—Tool Exports Drop

PURCHASES of machine tools and shop equipment made within the past few weeks by the Pennsylvania railroad now represent an investment in excess of $800,000. Several weeks ago this road placed orders for approximately $200,000 of crane equipment, while miscellaneous equipment ordered of late, and machine tool orders placed last week, are said to bring the total investment above $800,000. Large tool orders also recently have been placed by the Chicago, Burlington & Quincy railroad.

General industrial buying has been limited to single tool units in most cases. The Tebo Yacht Basin Co., Brooklyn, N. Y., has purchased $50,000 of plate working machinery within the past few days while a Cleveland manufacturer of special machinery closed on 3500 motors. The bulk of buying is being done by the automobile and allied industries.

Inquiry rate is extremely heavy, although the majority of inquiries are for single tools. During the week it became known the General Motors Corp. will soon issue a large list; a Cleveland manufacturing interest shortly will enter the market for about $100,000 of special machinery; a New England electrical manufacturer plans the purchase of about $50,000 of tools; the National Tube Co. is inquiring for more machinery for its proposed tube mill at Gary, Ind., while the Michigan Steel Corp. is expected to issue an inquiry shortly for machine tools.

Despite the fact inquiries are heavy actual orders are few and small. However, machine tool prices are tending upward, several manufacturers announcing higher prices effective Dec. 1. Figures just issued by the United States department of commerce bureau of foreign and domestic commerce, show that metalworking tool exports in October totaled 2062 machines which compares with 2313 in September. Crane and conveying equipment demand continues small, although during the week quite a few orders were placed.

Large Orders Are Featuring Equipment Market

NEW YORK, Dec. 5.—Heavy buying by the Pennsylvania railroad for its new Altoona, Pa., shops features the eastern machine tool market. Including about $225,000 of cranes, reported some time ago as placed with the Niles-Bement-Pond Co., purchases thus far have aggregated at least $500,000, and in some quarters the total is estimated to be even larger; in fact, purchases of other miscellaneous equipment, in addition to the cranes and some 100 machine tools, will bring the total up to more than $800,000 it is believed by machinery interests generally in this district.

Another large buyer of railroad equipment is the Chicago, Burlington & Quincy. Of a list of approximately $200,000 of machine tools, possibly half has been placeed with a seller with headquarters here. Other railroad business includes a 90-inch driving wheel lathe for the Carolina, Clinchfield & Ohio. An occasional machine tool is also being placed by the New York Central which now has before the trade an inquiry for two shapers, a turret lathe and a radial drill. The

Crane Awards and Inquiries of the Week

Orders Placed

One 180-foot crane runway and monorail hoist for Fischer-Sweeney Bronze Co., Boundbrook, N. J., to Cleveland Crane & Engineering Co.

Tramrail system for Titan Metal Co., Bellefonte, Pa., to tramrail division of Cleveland Crane & Engineering Co.

Two 40-ton locomotive cranes, 50-foot boom, for the Pickands-Mather Co., Cleveland, to Industrial Works.

One 20-ton locomotive crane for the American Locomotive Co., 30 Church street, New York, to Ohio Locomotive Crane Co.

One locomotive crane for New York Steam Co., New York, to Browning Co.

One 7½-ton electric crane, 65-foot span, for Gould & Taylor Cut Stone Co., Brooklyn, to Bedford Foundry & Machine Co.

Tramrail system for Chestnut Winkler Marble Co., Jersey City, N. J., to tramrail division of Cleveland Crane & Engineering Co.

One 10-ton locomotive crane for Slatter Erection & Construction Co., New York, to Brown Hoisting Machinery Co.

One 2-ton, cage control monorail hoist for E. T. Edwards, Columbia, Pa., to Shepard Electric Crane & Hoist Co.

Tramrail system for Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., to tramrail division of the Cleveland Crane & Engineering Co.

One 10-ton locomotive crane for O. B. S. Co., Philadelphia, for Westchester county bridge at Croton, N. Y., to Brown Hoisting Machinery Co.

One 7-ton locomotive crane for Union Building & Construction Co., Passaic, N. J., to Orten & Steinbrenner Co.

One industrial tractor for the Lehigh Valley railroad pier, No. 8, North river, New York, to Towmotor Co.

Two industrial tractors for export to England, to Towmotor Co.

Five cranes, one 35-ton and four 10-ton, for the Michigan Steel Corp., Detroit; awarded the Morgan Engineering Co., Alliance, O.

Orders Pending

One 15-ton crane for Aliquippa works, Jones & Laughlin Steel Co., Pittsburgh; bids being taken.

One 5-ton crane for the Westinghouse Electric & Mfg. Co., Homewood plant, Pittsburgh; bids being taken.

Preliminary inquiry out for eight or 10 cranes, including ladle crane, skullcracker crane, stripper crane, etc., Pittsburgh manufacturers' expansion plans in formative stage.

Three 125-ton ladle cranes for Carnegie Steel Co., Duquesne, Pa.; action to be taken this week.

One each 10-ton and 15-ton pneumatic cranes and one 5-ton 3-motor crane for installation at Clairton, Pa., by-product plant, and one crane for the Weirton, W. Va., by-product plant; to be purchased by the Koppers Co.; the 5-ton crane will be bought this week.

One 10-ton crane; specifications changed from 75 to 70-foot span for the Blaw-Knox Co., Pittsburgh; new bids being taken for prompt delivery.

One each 3-ton and 5-ton cranes for the Pittsburgh Screw & Bolt Co., Pittsburgh; bids being taken.

One 10-ton crane for the Pittsburgh Knife & Forge Co., Coraopolis, Pa.; bids all in.

One 7½-ton crane for the Universal Steel Co., Bridgeville, Pa.; bids all in.

One 10-ton and 10 jib cranes for the Pennsylvania railroad, Freedom, Pa.; action expected soon.

One ladle crane for Heyl & Patterson, Inc., Pittsburgh, for installation in central Ohio, for pig casting purposes.

Several cranes, American Rolling Mill Co., Ashland, Ky.; bids being taken.

inquiry of the Chesapeake & Ohio railroad still is pending.

While a few fair-sized industrial orders have been placed, including about $50,000 of plate shop equipment for the Tebo Yacht Basin Co., Brooklyn, miscellaneous demand continues restricted, and in some quarters, buyers are beginning to postpone action until after the holidays. On the other hand, it is known that some of the larger buyers, particularly one or two of the automobile builders, are contemplating the purchase of considerable equipment within the next three or four weeks. Prices are steadily stiffening.

While demand for electric overhead cranes is showing little improvement, more activity prevails in locomotive cranes. There appears, in fact, to be an unusually good demand for this season of the year.

Fair Volume of Business Done

MILWAUKEE, Dec. 5.—A moderate run of small orders, making up a fair volume, continues to be received by machine tool manufacturers here. Demand seems to be holding up better than had been expected.

Bare necessities alone are being filled, pending the close of the year and the inventory period. Prospects for January are bright in view of the inquiries now coming out especially from automobile makers and the parts industry. Shoe and leather machinery makers are active and doing some new buying. Paper mill machine shops also are showing more interest. In the hydro-electric power field appearances are that manufacturers will be good customers in 1923, due to the large number of new projects and enlargement plans now being announced.

Equipment Demand Improves Gradually

CINCINNATI, Dec. 5.—Gradual improvement in the machine tool industry has been noted here for the past six months and now is emphasized by recent increased orders and a notably better feeling among shop equipment and machinery users. No large orders have been placed with Cincinnati manufacturers but the volume of one unit business gradually has increased and several local plants are speeding up production. Dealers report exceptionally good sales and they in turn are placing orders for miscellaneous stock replacements with manufacturers.

With the seasonable slackening of production activities in the automobile industry there is an increasing demand for equipment from that source and a considerable part of the new business recently placed here represents equipment for replacement and expansion of automotive plants. The General Motors Corp. is about to issue an important list for the outfitting of the proposed Chevrolet automobile and Fisher body plants in this city. This equipment is to be placed and ready for operation by April 15. Cincinnati and Louisville promoters of a southern timber milling project will be in the market for complete equipment for several plants for delivery early in the spring.

To Close on Burlington List

CHICAGO, Dec. 5.—The Burlington railroad is expected to place its machine tool business soon as the purchasing department is engaged in final elimination, preparatory to awarding the business. This is one of the most important lists put out in several months and it has been pending for some time. The Milwaukee railroad has not yet moved definitely in placing orders for its recent inquiry, but in a number of instances is considering used equipment. It is thought considerable of its purchase will be of this class.

As is usual at this season, sellers of machine tool equipment are meeting much delay in closing sales, as many users prefer to delay until after the end of the year, for inventory reasons, and also to watch the trend of business before adding to their equipment. November brought a fair volume of business, though not as much as the two preceding months. December normally is a slow month and sales for the remainder of the year are not expected to run high. Automotive buyers are not as active as a short time ago, though the International Harvester Co. continues to buy from time to time for its tractor plant. Agricultural implement manufacturers are facing light business and are not buying.

Large Equipment Orders Lacking

CLEVELAND, Dec. 5.—Orders for machine tools and shop equipment during the past week have been small. Practically all the machinery business done was in single units and probably the largest equipment order placed involved 3500 motors, ranging in size from 1 to 15 horsepower. This latter order, which was placed with a Cleveland manufacturer's agent, came from a local manufacturer of special machinery, the motors to be used as part of the machinery which it turns out. Indicative of machine tool demand is the report of another Cleveland machinery house to the effect its total sales for the week were five machines, each tool being distributed to a separate buyer. These machines involved four Warner & Swasey screw machines and one large Bliss press. Reports of other machinery dealers are in line with this volume of sales.

Practically all the business being done is in secondhand equipment and represents actual needs. The automobile industry is furnishing the bulk of demand here. Very little railroad buying is in evidence, although a few orders from these interests are coming out. However, prospective demand, especially in single tools is large, the total number in the market, on which action has been held up until after Jan. 1, being enormous. In addition there are several large projects being developed here which are expected to furnish some demand. One of these is expected to purchase at least $100,000 of special machinery. Dealers here are actively working on each inquiry that comes out and included is one from the Columbus Sheet Metal Works, Columbus, O., for a quantity of sheet metalworking equipment and another from the Modern Woodworking Co., Columbus, for some woodworking machinery. A slotting machine is inquired for by the Monighan Machine Co., Chicago.

Inquiry Rate Continues High

PITTSBURGH, Dec. 5.—Machine tool inquiry continues high but only an occasional sale is noted. The great majority of buyers seem to be postponing purchases until after inventory, or the first of the year. The National Tube Co., which has been adding to its original inquiry for machine tool equipment to be installed in the proposed tube mill at Gary, Ind., recently commenced to purchase and soon probably will consummate buying of the entire 25 or 30 machines needed. In addition to the four 5-foot radial drills and one forging machine purchased by the Pennsylvania railroad as reported last week, five 24-inch shapers have been bought from the same dealer. An eastern Pennsylvania user closed on four lathes, 24 and 26-inch here last week and Hubbard & Co., Pittsburgh, bought three upsetting machines, two 1½-inch and one ¾-inch. Among the several buyers closing on single items was a local manufacturer who ordered a 36-inch planer and the United Engineering & Foundry Co. bought two large combination boring, drilling and milling machines from the Niles, Bement, Pond Co. A Buffalo user closed on a 24-inch x 12-foot slab miller and pending inquiries include a 5-inch upsetting machine, a large roll lathe, a 10-foot boring mill and a plate shear. A few of these are used machines on which inspection has been made and orders are expected shortly.

The November movement of used machinery was heavy and December promises to compare favorably. The Alliance Ma-

chine Co. and Alliance Steel Casting Co., Alliance, O., are doubling their plant capacities and probably will need considerable machine tool equipment. The Michigan Steel Corp., which closed on its cranes and sheet rolling equipment, is expected to enter the market for machine tools for its machine and repair shops. The current week is expected to witness the winding up of a number of crane propositions held in abeyance for some time. The Koppers Co. will buy a 5-ton crane for Clairton, Pa.; the Jones & Laughlin Steel Co., a 15-ton crane for Aliquippa, Pa., and the Westinghouse Electric & Mfg. Co., a 5-ton crane for its Homewood plant. The Cutler Steel Co. has withdrawn its crane inquiry and will repair present equipment.

November Sales Are Encouraging

BOSTON, Dec. 5.—Machine tool demand in this district continues relatively quiet. However, several large dealers report a better total in November than for any month in the year except October, and as a rule sales for the past month have been beyond expectations. One New England manufacturer of lathes and shapers had a better national volume of business in November than for any month in the last 18 with the exception of October, 1922. A manufacturer of grinding tools reports sales for November, 1922, more than doubled those in November 1921.

Sales of dealers in used equipment have been lowered somewhat during the last week by heavy sellng of tools drect to users from the stock of over 100 at the Becker Milling Machine Co.'s plant. The Metz Motor Co. equipment also is being disposed of so that the local used tool market at the present moment is somewhat over supplied. The policy of waiting until after the first of January before adding to equipment still continues. However, unusual activity in some lines is forcing buying, and some 12 or 14 new tools are reported placed by the leading dealers.

The price of new equipment tends upward, so that prospective buyers are hesitating between the desire to wait until January and the desire to cover before further advances take effect. Prices in several lines advanced effective Dec. 1. Electrical specialty manufacturers are unusually busy, and several are in the market for tools. One large electrical company is understood to be on the point of buying $50,000 of sensitive drills and considerable other equipment. Prices of used tools at recent auction sales have been erratic, some tools bringing over 75 per cent of the new tool price, and others less than 25 per cent. Inquiry comes from optical goods manufacturers, jewelers, paper machine manufacturers, and miscellaneous repair shops.

Single Unit Orders Still the Rule

TORONTO, Ont., Dec. 5.—Demand for machinery and machine tools is coming from all parts of the Dominion. The majority of orders are for single units but many buyers are entering the market and the class of equipment required covers a wide range of industrial activities. Prospective demand is more pronounced and equipment dealers expect greater improvement with the beginning of the new year.

At present several large plants for motor car production are under construction for which equipment has not been purchased. Buying in a small way is being done by the Canadian National railways and the Canadian Pacific railway for equipment for car shops. It appears to be the tendency of buyers to purchase new equipment instead of rebuilt and while the demand for the latter is fairly active, inquiries now coming in specify new tools. Small tools are showing improvement and individual orders are larger and more numerous.

The Thompson Motor Supplies, Ltd., will purchase equipment for a factory. The Wilkie Products Co., 312 Pitt Street, Tillsonburg, Ont., will require machinery and tools for a plant for the manufacture of piston rings. The Howard Furnace Co., 881 Yonge street, Toronto, Ont., will need eqtiipment for a plant. Joseph Crane, 309 Esplanade East, North Vancouver, B. C., will build a marine way and erect a ship repair machine shop to cost $40,000.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

BRIDGEPORT, CONN.—Jenkins Bros., 510 Main street, plans a manufacturing unit at an estimated cost of $250,000.

IVORYTON, CONN.—Comstock, Cheney & Co., maker of hammers, has increased its capital stock from $700,000 to $1,050,000.

NEW HAVEN, CONN.—The New Haven Maleable Iron Co., founder, has increased its capital stock from $50,000 to $150,000.

NEW HAVEN, CONN.—The Southern New England Electric Co. has incorporated with $50,000 capital. Milton J. Warner, Branford, Conn., is one of the incorporators.

NORWALK, CONN.—The United Mfg. Co. has been incorporated to make iron and brass goods with $50,000 capital by John H. Richter, Frank Fox and George O. Dufault.

SOUTHINGTON, CONN.—The Stanley Works, New Britain, Conn., is erecting a 60-foot addition to the forging department of its branch plant, which will be equipped with new machinery.

AURORA, Ill.—The Aurora Shade Machinery Co., 32 South La Salle street, has been incorporated with $20,000 capital by William Lux, Frank F. Wright and Harry G. Griswell.

CHICAGO—The Detroit Approved Spring Co., 5531 Woodward avenue, recently was incorporated to manufacture springs.

CHICAGO—The People's Gas Light & Coke Co., 122 South Michigan avenue, plans a meter and repair works.

CHICAGO—The Chicago Nipple Mfg. Co., 1966 Southport avenue, plans a 1-story addition to its branch plant at Baltimore, to be 90 x 100 feet.

CHICAGO—The National Tank Car Co. has reduced its capital stock from $257,500 and 1000 shares non par to $137,500 and 900 shares non par.

CHICAGO—The Knapp Bros. Mfg. Co., 2419 West Fourteenth street, has a site on which it plans a 1-story factory, 75 x 400 feet, to cost about $100,000.

CHICAGO—The Adams Pattern & Foundry Co., 6250 South Halsted street, has let the contract for a foundry building, 24 x 98 feet, to cost about $25,000.

CHICAGO—The Rieke Metal Products Corp. has been incorporated with 300 shares of no par value to manufacture and deal in machines, machinery, etc. Its headquarters are at 163 West

Tire Carrier
This was formerly a Casting

A Few Reasons Why
Pressed Steel Parts
are Superior to castings

Read over these reasons *carefully*. Any one of them would make it well worth your while to substitute Parish and Bingham Pressed Steel Parts for the castings that you are using.

Parish and Bingham Pressed Steel Parts are *stronger* than castings — and they are *tougher* than castings; therefore their *reliability* is greater and if you use them in your products your reputation is made secure.

Parish and Bingham Pressed Steel Parts are *lighter* than castings and are *less brittle*—advantages that certainly should not be underestimated.

Parish and Bingham Pressed Steel Parts are absolutely *uniform* in shape and weight—which means they are interchangeable without alteration, under all conditions.

Parish and Bingham Pressed Steel Parts are produced much more rapidly and at a much lower cost than castings for the same purpose could be produced. Then, since all of the above points are facts that have been demonstrated time and time again, do you not believe it would be time well invested to check up on all the castings that you are now using and see how many of them could be superseded by our stampings?

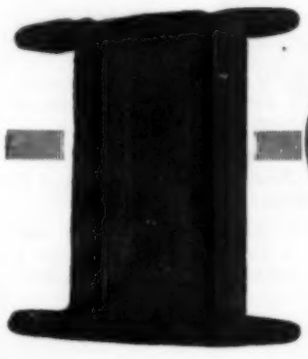
In doing this we will gladly offer you the services of our corps of Engineers — men whose services have proved valuable to many others. Just drop us a line.

Gasoline Tank Support
Formerly made from Malleable Casting or Drop Forging

Parish & Bingham Corporation

Builders of Automobile Frames and Steel Stampings

CLEVELAND, OHIO



Motor Support
Formerly a Casting

Warehouse Steel Prices

Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.065c
Buffalo	3.10c
Chicago	2.80c
Cincinnati	2.95c to 3.10c
Cleveland	2.91c
Detroit	3.00c
New York	3.04c
Philadelphia	3.025c
San Francisco	3.40c
Seattle	3.60c
St. Louis	2.90c
St. Paul	3.05c
Los Angeles	3.50c

IRON BARS

Boston	3.065c
Buffalo	3.10c
Chicago	2.80c
Cincinnati	3.10c
Detroit	3.00c
New York	3.04c
Philadelphia	3.025c
St. Louis	2.90c

SHAPES, STRUCTURAL

Boston	3.165c
Buffalo	3.20c
Chicago	2.90c
Cincinnati	3.05c to 3.20c
Cleveland	3.01c
Detroit	3.10c
New York	3.14c
Philadelphia	3.125c
San Francisco	3.40c
Seattle	3.60c
St. Louis	3.00c
St. Paul	3.15c
Los Angeles	3.60c

PLATES

Boston	3.165c
Boston 3/16-inch	3.04c
Buffalo	3.20c
Chicago	2.90c
Cincinnati	2.95c to 3.20c
Cleveland	3.01c
Detroit	3.10c
New York	3.14c
Philadelphia	3.125c
San Francisco	3.33c
San Francisco	3.50c
Seattle	3.60c
St. Louis	3.00c
St. Paul	3.15c
Los Angeles	3.75c

NO. 10 BLUE ANNEALED SHEETS

Boston, 1/4-inch	4.15c
Buffalo	4.05c
Chicago	4.00c
Cincinnati	3.75c to 4.00c
Cleveland	3.70c to 3.76c
Detroit	3.95c
New York	4.19c
Philadelphia	3.85c
San Francisco	4.50c
Seattle	4.85c
St. Louis	4.10c
St. Paul	4.25c
Los Angeles	4.70c

NO. 28 BLACK SHEETS

Boston	5.40c
Buffalo	4.85c
Chicago	4.85c
Cincinnati	4.00c
Cleveland	4.40c
Detroit	4.90c
New York	4.90c
Philadelphia	4.60c
San Francisco	6.05c
Seattle	5.85c
St. Louis	4.95c
St. Paul	5.10c
Los Angeles	6.10c

NO. 28 GALVANIZED SHEETS

Boston	6.40c
Buffalo	5.85c
Chicago	5.85c
Cincinnati	5.20c
Cleveland	5.40c
Detroit	5.90c
New York	5.90c
Philadelphia	5.75c
San Francisco	6.90c
Seattle	6.85c
St. Louis	5.95c
Los Angeles	6.90c

BANDS

Boston	4.25c
Buffalo	3.90c
Chicago	3.55c
Cincinnati	3.70c to 3.85c
Cleveland	3.71c
Detroit	3.80c
New York	3.84c
Philadelphia	3.825c
San Francisco	4.05c
Seattle	4.35c
Los Angeles	4.40c

HOOPS

Boston	4.75c
Buffalo	4.10c
Cleveland	3.71c
Detroit	4.20c
New York	4.39c
Philadelphia	4.25c
Seattle	5.00c

COLD ROLLED STEEL

Boston (rounds)	4.00c
Boston (shapes)	4.50c
Buffalo (rounds)	3.95c
Buffalo (shapes)	4.45c
Chicago (rounds)	3.80c
Chicago (shapes)	4.30c
Cincinnati (rounds)	3.75c
Cleveland (rounds)	3.75c
Cleveland (shapes)	4.25c
Detroit (rounds)	3.80c
Detroit (shapes)	4.30c
New York	3.90c
New York (shapes)	4.40c
Philadelphia (rounds)	3.85c
Philadelphia (shapes)	4.35c
San Francisco	5.0uc
Seattle	5.25c
Los Angeles	5.10c

Washington street and the incorporators are Walter J. Courtney, Theodore W. Rieke and Arthur Lorenz.

CHICAGO—The McCarthy Foundry Co. has increased its capital stock from $300,000 to $400,000.

CHICAGO—The Advance Wheel Mfg. Co., 125 West Illinois street, has been incorporated with $10,000 to manufacture polishing wheels by Ralph J. Garvey, James J. Manderscheid, and others.

ROCKFORD, ILL.—The George H. Spengler Co., 234 Mill street, has been incorporated with $20,000 capital stock by Frank B. Vander Bogart, George H. Spengler, H. R. Trahern, F. D. Keeler, M. F. Thayer and C. B. Thayer.

CHICAGO—The Peters Metal Sales Co., 1130 Capital building, 139 North State street, which has been incorporated with $15,000 to manufacture metal window ventilators by Robert P. Rollo, room 650 at 38 South Dearborn street, Katherine Hiatt and Isabel Peters. Mr. Rollo is attorney for the company.

JOLIET, Ill.—The Barrett Hardware Co. has increased its capital stock from $100,000 to $500,000.

LA SALLE, Ill.—The Barnes Zinc Products Co., Eighth and Union streets, has been organized with 2000 shares of no par and $100,000 capital by Frank Page, C. B. O'Neil, and others.

ROCKFORD, ILL.—The Rockford Cabinet Co. has let the contract for a 4-story addition, 128 x 202 feet, to cost about $250,000.

LOUISVILLE, KY.—The Rex Grease Gun Co. has been incorporated with $10,000 capital stock by A. B. Moore, Fred C. Bellis and L. J. Snadmann.

BROOKLYN, N. Y.—The Mosco Mfg. Co., iron holders and specialties, has been incorporated with $10,000 capital stock by S. Moskowitz, L. Jones and G. L. Coombs. The company is represented by Oppelman & Winberger, 144 Rivington street.

BUFFALO—The Poulin Automobile Body Co. has been incorporated with $5000 capital stock by T. F. Poulin, S. L. Keough and R. Gauther. The company is represented by J. J. Brown.

JAMESTOWN, N. Y.—The Lundell Eckberg Mfg. Co., steel windows, has been incorporated with $25,000 capital stock by V. S. Lundell and G. Eckberg. The company is represented by D. L. Carlson.

PORTLAND, ME.—The Flexo Mfg. Co. has been incorporated to make scrapers with $10,000 capital by Herman W. Willard, Irwin R. Eaton and others.

BALTIMORE—A $150,000 plant will be erected here by the Air Reduction Co., New York City. Plans are being prepared by Francisco & Jacobus, architects.

ASHLAND, MASS.—Contract has been awarded to Palmer Construction Co. for a factory for the Savings Spring Co.

BOSTON—Crosscup Press, Inc., has been formed with a capital of $15,000. Louis E. Crosscup is president.

BOSTON—The Aluminum Foundry Co. has been incorporated with $10,000 capital by Harry D. Finberg, Abraham Sherman and Max N. Lebowitz.

BOSTON—The Economy Last Hinge Co., Inc., has been incorporated to build machinery with $250,000 capital by Charles J. Martell, Cambridge, Mass., Granville W. Leighton, West Somerville, Mass., and Charles S. Naer.

BOSTON—The Boston Steel Stamp & Engraving Co., Ltd., has been incorporated to make metal dies and build machinery with $10,000 capital by Albert E. Kaye, Harold H. Hill and Emile C. Franzmann, Somerville, Mass.

GARDNER, MASS.—The Standard Specialty Works is building a 1-story manufacturing unit, 40 x 100 feet.

LAWRENCE, MASS.—Foundation is in for a machine shop for the Champion International Co.

LYNN, MASS.—G. Bertholdi plans a 1-story machine shop at an estimated cost of $25,000.

MARLBORO, MASS.—The Marlboro Wire Goods Co. plans to build an additional factory.

PITTSFIELD, MASS.—The General Electric Co. is to erect a 1-story, 71 x 100-foot addition at a cost of $20,000.

WORCESTER, MASS.—The Home Accessories Co., 44 Pearl street, contemplates a 2-story plant addition.

WORCESTER, MASS.—Contract has been awarded to E. J. Cross Co., Worcester, for a manufacturing building for the Parker Wire Goods Co.

WORCESTER, MASS.—The M. S. Wright

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE
BOURNE-FULLER CO.
Iron, Steel
Pig Iron
Coke

CLEVELAND

New York **Chicago** **Detroit**
San Francisco
Cincinnati

Co., manufacturers of vacuum cleaners, has organized the Sweeper Vac Appliance Co. with a capital of $25,000. Henry R. Kind is president.

WORCESTER, MASS.—William H. Blount, formerly superintendent of Sleeper & Hartley, Inc., and Ralph G. Arey have organized the Arey & Blount Electric Co. to manufacture electric flashers.

WORCESTER, MASS.—Frederick M. Ramsdell has organized the Ramsdell Tool & Mfg. Co. to manufacture screw machine products and machinery. The company has been incorporated for $25,000.

ALBION, MICH.—The Service Caster & Truck Co. plans a plant here, 50 x 200 feet.

DETROIT—The Detroit Lubricator Co., 5938 Trumbull street, has awarded a contract for a 2-story power house to cost about $26,000.

DETROIT—The Rickenbacker Motor Co. has acquired the former plant of the Detroit Steel Co. and will erect an addition to it at an estimated cost of $12,000.

DETROIT—The Ackerman-Blaesser-Fezzy Co., Inc., has been incorporated with $30,000 capital stock to manufacture automobile parts by C. E. Blaesser, C. T. Fezzy and E. L. Ackerman, 1167 Longfellow avenue.

FLINT, MICH.—The United Auto Parts Co. has been incorporated with $30,000 capital stock by Joseph F. Zimmerman, William J. and Harold R. Burns, 1303 North Saginaw street.

FORD CITY, MICH.—The Motor Pattern & Machine Co. has been incorporated with $10,000 capital stock to manufacture patterns and special equipment by L. J. Feltes, J. J. Marks and C. A. Brady.

MUSKEGON, MICH.—The Paragon Recoil Snubber Co. has been incorporated with $10,000 capital stock to manufacture shock absorbers, etc., by James W. McNabnay, Oley R. Fountain and George E. Craig, 92 West Webster avenue.

LAKEPORT, N. H.—Scott & Williams, Inc., builder of machinery, has increased its capital stock from $1,000,000 to $2,000,000.

BOUNDBROOK, N. J.—The Fisher-Sweeney Bronze Co. whose plant at Hoboken, N. J., was damaged by fire several weeks ago, has started work on a 70 x 185-foot foundry here.

JERSEY CITY, N. J.—Luke Loughlin & Co., 114 Jefferson avenue, plans a 1-story factory building, 50 x 100 feet, to cost about $20,000.

TRENTON, N. J.—The Empire Tire & Rubber Co. plans a 1-story addition, 50 x 90 feet.

TRENTON, N. J.—Plans are being prepared by the Freeman Electric Co. for a 1-story addition. The company manufactures electrical products.

BROOKLYN—The Tebo Yacht Basin Co. has started work on the erection of a plate shop, and is now buying equipment.

NEW YORK—Approximately $100,000 will be spent by the New York Edison Co. on extensions to its power plant in Gold street.

NEW YORK—Approximately 4000 square feet of floor space has been added to the plant of the Morris Tool Co., in Thames street, by virtue of a newly acquired lease.

TONAWANDA, N. Y.—The Tonawanda Power Co. plans a 1-story addition to its generating plant.

CHARLOTTE, N. C.—The Southern Ice Machine Co. plans to increase its capital stock by $50,000.

COLUMBUS, O.—According to H. L. MacAyeal, state welfare director, the legislature will be asked for an appropriation for rebuilding the auto tag shop and planing mill of the Ohio penitentiary. The loss by fire may exceed $75,000.

DAYTON, O.—The Crawford, McGregor & Canby Co. plans plant extensions at an estimated cost of $50,000.

DAYTON, O.—The Dayton lodge of Elks has approved plans for a $1,000,000 building. Five sites are being considered.

DAYTON, O.—The Kelemet Cored Bar Co., capitalized at $20,000, has been incorporated by John R. Brownell, G. Clifford Shroyer, Henry G. Pagani, O. B. Brown and A. S. Frank.

FOSTORIA, O.—The Seneca Wire & Mfg. Co. is building an extension to its plant.

IRONTON, O.—The Belfont Iron Works Co. plans a building to house a slag crushing machine.

ERIE, PA.—The Northwestern Motors Co. plans to rebuild its plant recently damaged by fire.

LANCASTER, PA.—The Champion Blower & Forge Co. plans a 1-story addition, 60 x 145 feet, to cost about $25,000.

MARS, PA.—The foundry and pattern shop of the Velte Foundry & Machine Co. recently was damaged by fire.

NORRISTOWN, PA.—A bond issue of $500,000 has been voted for the erection of a high school, which will have a vocational department.

RIDGWAY, PA.—The Hyde Murphy Co. plans a 4-story addition, 60 x 90 feet, to cost about $25,000.

GREENVILLE, S. C.—The Southern Draft Regulator Co. has increased its capital stock to $51,000.

GREENVILLE, S. C.—The Shambow Shuttle Co. plans a 1-story addition, 70 x 300 feet, to cost about $75,000.

KNOXVILLE, TENN.—The Cherokee Spring Co. has increased its capital stock to $200,000.

MEMPHIS, TENN.—The Tennessee Sheet Metal Works has been incorporated by L. A. Walker, C. L. Holden and J. D. Moorefield.

NASHVILLE, TENN.—The Federal Can Co. will erect a 1-story addition at an estimated cost of $15,000.

CHARLESTON, W. VA.—The Tire Gauge Valve Corp. has been incorporated with $200,000 capital stock by H. D. Everett, C. S. Munroe and L. Voelker.

DUNDON, W. Va.—J. C. Bradley, president of the Elk River Coal & Lumber Co., has awarded the contract for six steel bridges for its subsidiary the Buffalo Creek & Gauley railroad. The contract went to the Phoenix Bridge Co., Phoenixville, Pa.

HUNTINGTON, W. VA.—The Nightrack Mfg. Co. plans a 2-story plant, 40 x 120 feet, to cost about $25,000.

WHEELING, W. VA.—The Centre Foundry & Machine Co. has let the contract for a foundry building, 100 x 320 feet.

CICERO, WIS.—The All-American Metallic Casket Corp. has been organized with $50,000 capital stock and is starting work on a plant.

West of the Mississippi

EL DORADO, ARK.—The Downey Tank Co. has been incorporated with $50,000 capital stock by William and J. P. Walker and Fred Downey.

TRACY, Cal.—Bids are being received by the General Milk Co. to erect a milk condensery which will cost $75,000. Wieland, Mazurette & Wieland, Modesto, are the contracting architects.

NEW PRAGUE, MINN.—The Gophers Machine & Mfg. Co. plans a 1-story machine shop.

GALVESTON, TEX.—The Atlas Engineering Works has been incorporated with $50,000 capital stock by A. A. Sangster, W. H. Lovell, and others.

Business in Canada

BRANTFORD, ONT.—The Brantford Brass Foundry Co., Ltd., has been incorporated with $100,000 capital stock by David L. Webster, Henry W. Bennett, Thomas E. Hutton, and others.

ELMIRA, ONT.—The Superior Pistons, Ltd., have been incorporated to manufacture pistons, tools, etc., with $120,000 capital stock by Peter F. Stumpf, Christian Dreisinger, George Klinck, and others.

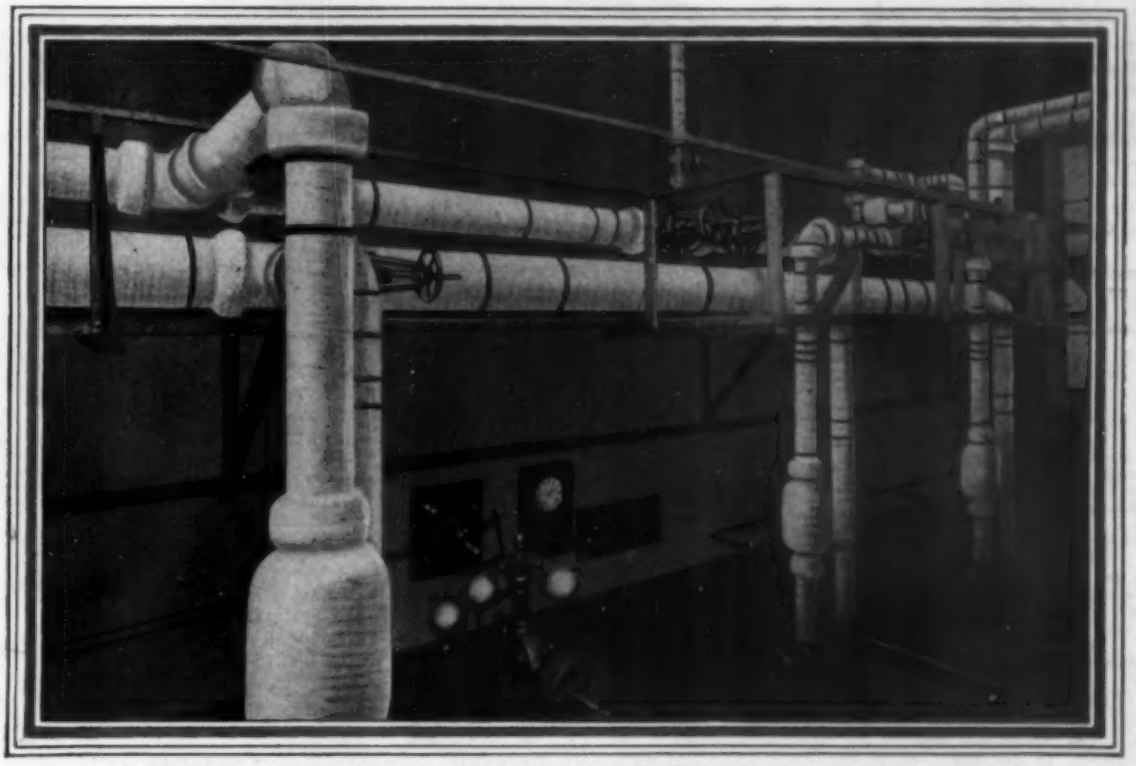
LONDON, Ont.—C. Northey, 825 Dufferin avenue, London, has been awarded general contract for erection of a factory for the London Shipping Containers, Ltd., to cost $50,000.

ST. THOMAS, ONT.—The Davey Hardware Co., has been incorporated to manufacture hardware, etc., with $200,000 capital stock; provisional directors George W. Davey, Russell G.

Metalworking Tool Exports Decline

FIGURES just issued by the United States department of commerce bureau of foreign and domestic commerce show that in October 2062 individual metalworking tools were exported. This compares with 2313 in September, a loss of 251; 2456 in August, a loss of 394; 2306 in July, a loss of 244; 2464 in June, a loss of 402 and 2049 in May, a gain of 13. Individual comparisons for the six months are as follows:

	Oct.	Sept.	Aug.	July	June	May
Lathes	80	67	85	76	64	81
Boring and drilling machines	166	93	94	65	273	115
Planers, shapers and slotters	12	13	25	26	45	14
Bending and power presses	12	21	19	18	32	24
Gear cutters	52	26	10	37	15	8
Milling machines	50	27	36	25	39	21
Sawing machines	10	23	13	12	24	16
Thread cutting and screw machines	16	42	118	24	33	30
Punching and shearing machines	49	18	17	31	62	12
Power hammers	9	27	15	12	38	59
Rolling machines	2	2	1	20	1	5
Wire drawing machines	7	1	9	2	139	128
Polishing and burnishing machines	4	7	4	1	4	2
Sharpening and grinding machines	1187	1081	1375	1062	1270	1226
Pneumatic portable tools	406	865	635	895	425	308
Total	2062	2313	2456	2306	2464	2049



CRANE PIPING IN THE ENGINE ROOM, ROCK ISLAND LINES POWER PLANT, ARMOURDALE, KANSAS

BETTER VALVES FOR ANY STEAM PLANT

Efficient operation of any power plant is dependent on effective control. Piping systems constructed with Crane valves, fittings and steam specialties give assurance of dependable service and long life. Designed in accordance with proved principles, manufactured from suitable materials and thoroughly inspected and tested before leaving the works, Crane valves embody the highest quality and adaptability to every piping requirement.

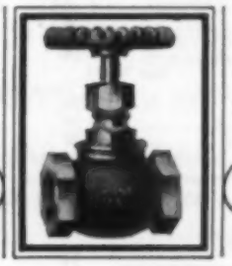
CRANE

GENERAL OFFICES: CRANE BUILDING, 836 S. MICHIGAN AVE., CHICAGO

Branches and Sales Offices in One Hundred and Thirty-five Cities

National Exhibit Rooms: Chicago, New York, Atlantic City

Works: Chicago and Bridgeport



Crane 75 Low Pressure Globe Valve

Buttery and Ernest E. Davey, of St. Thomas.

TORONTO, ONT.—The Skinner Bros. Mfg. Co., Inc., St. Louis, manufacturers of heaters, etc., plans to establish a plant in Canada.

TORONTO, ONT.—The Howard Furnace Co., 381 Yonge street, will erect a plant to cost $24,000.

TORONTO, ONT.—James Carnwath, 502 Harbor Commissioners building, Toronto, has the contract for a plant to cost $50,000 for the Independent Concrete Pipe Co. here.

TORONTO, Ont.—The National Cash Register Co. of Canada, Ltd., has purchased a 4-story building which will be equipped and used as a manufacturing plant.

TORONTO, ONT.—The Beattie Automatic Phonograph Co., Ltd., has been incorporated with $500,000 capital stock by George B. Beattie, William H. Green, Malcolm S. Beard, and others.

TORONTO, ONT.—The Non-Twist Electrics, Ltd., has been incorporated to manufacture electrical machinery, etc., with $150,000 capital stock by Thomas A. Silverthorn, Archibald C. Jennings, Arthur E. Hall, and others.

TORONTO, ONT.—The Clear Vision Pump Co., Ltd., has been incorporated with $50,000 capital stock to manufacture pumps, etc., by Donald H. Rowan, Leonard A. Richard and W. M. Bridge.

TORONTO—The Paragon Products, Ltd. have been incorporated to manufacture dishwashers, machinery, etc., with $750,000 capital stock by Albert E. Knox, Edward L. Middleton, Thomas L. Monahan, and others.

TORONTO, Ont.—The Beaver Laundry Machinery Co. ,Ltd., intends to erect a manufacturing plant. The company which has a capital stock of $50,000 will manufacture washers, presses, etc., for steam laundries and will eventu-

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron	$5.95
Mesabi Bessemer, 55 per cent iron	5.70
Old Range nonbessemer, 51½ per cent iron	5.20
Mesabi nonbessemer, 51½ per cent iron	5.05

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 53 to 63 per cent	9.50 to 10.50

FOREIGN IRON ORE
Cents per unit, c.i.f. Atlantic ports.

Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent	10.00 to 11.00
Swedish and Norwegian low phosphorus, 68 per cent	11.00 to 11.50
Swedish foundry or basic, 68 per cent	9.00 to 9.50
Spanish foundry or basic, 52 to 54 per cent	8.00 to 9.00

Manganese Ore

Brazilian, minimum 47 per cent c.i.f. Atlantic ports, 29 cents per unit, nominal. (Equivalent to $24.67 per gross ton or 51.4 cents per unit, duty paid, tidewater.)

Indian 48 to 50 per cent c.i.f. Atlantic ports, nominal.

Caucasian, 52 per cent, c.i.f. Atlantic ports, nominal.

Fluor Spar

85 and 5% grade

Washed gravel, Kentucky and Illinois mines, per ton	$21.50

Rivets

Structural rivets, Pittsburgh	3.00c to 3.15c
Boiler rivets, Pittsburgh	3.10c to 3.25c
Rivets, ⅞-inch and smaller	65 off to 65-5 off

Nuts and Bolts

NUTS
(Up to 1¼ and 1½ inches inclusive)

Hot pressed square or hexagon blank or tapped	$3.25 to $3.50 off list
Cold punched square or hexagon blank or tapped	$3.25 to $3.50 off list
Cold punched semifinished hexagon nuts ½-inch and larger	70-10-2½ off
Cold punched semifinished hexagon nuts ⅞-inch and smaller	70-10-5 off
Case hardened, finished, hexagon	65-5 off

Price f.o.b. Pittsburgh, Packages of 50.

CARRIAGE BOLTS
½ x 6 inches, smaller and shorter

Rolled thread	50-10-5 off
Cut thread	50 off
Larger and longer	50 off

MACHINE BOLTS
(½ x 4 inches, hot pressed nuts)

Rolled thread	60-5 off
Cut thread	50-10 off
Larger and longer	50-10 off

(½ x 4 inches, cold punched nuts)

Cut thread	45 off
Larger and longer	45 off
Lag screws	50-10 to 60-5 off
Plow bolts Nos. 1, 2 and 3 heads	50-5 off
Tap bolts	30 off
Bolt ends with hot pressed nuts	50-10 off
Bolt ends with cold punched nuts	45 off
Blank bolts	50-10 off
Rough stud bolts with nuts	45 off

WASHERS

Wrought washers	$5.75 off list

Steel Pipe

Pittsburgh basing discounts, jobbers, carloads

	Black	Galvanized
Butt Weld		
⅛-inch	49	23½
¼ and ⅜-inch	55	29½
½-inch	60	46½
¾-inch	64	52½
1 to 3-inch	66	54½
Lap Weld		
2-inch	59	47½
2½ to 6-inch	63	51½
7 to 8-inch	60	47½
9 to 12-inch	59	46½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	64	52½
Lap Weld		
2-inch	57	45½
2½ to 6-inch	61	49½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	45	28½
¼ and ⅜-inch	51	34½
½-inch	57	46½
¾-inch	62	51½
1 to 1½-inch	64	53½
2 to 3-inch	65	54½
Lap Weld		
2-inch	57	46½
2½ to 4-inch	61	50½
4½ to 6-inch	60	49½
7 to 8-inch	56	43½
9 to 12-inch	50	37½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	46	36½
¾ to 1½-inch	49	39½
2 to 2½-inch	51	41½
Lap Weld		
2-inch	45	36½
2½ to 4-inch	47	38½
4½ to 6-inch	46	37½
7 to 8-inch	42	29½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers, carloads

	Black	Galvanized
THREADS AND COUPLINGS		
Butt Weld		
¼ and ⅜-inch	+ 7	+33
½-inch	26	8
¾-inch	32	17
1 to 1½-inch	34	19
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	29	15
2½ to 6-inch	32	19
7 to 12-inch	30	17
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
Butt Weld		
¼ and ⅜-inch	+15	+48
½-inch	25	13
¾-inch	32	18
1 to 1½-inch	34	20
Lap Weld		
2-inch	30	17
2½ to 4-inch	33	21
4½ to 6-inch	32	20
7 to 8-inch	25	13
9 to 12-inch	20	8

DOUBLE EXTRA STRONG
Butt Weld

½-inch	+37½	+49½
¾-inch	+18	+30
1-inch	+34	+46
1¼-inch	+18	+30
1½-inch	+17	+29
Lap Weld		
2 and 2½-inch	+ 3	+15
3 to 4-inch	2	+ 7
4½ to 6-inch	1	+ 7
8-inch	+ 4	+ 8

Boiler Tubes

L. C. L. discounts. C. L. 4 points larger

STEEL	
1¾-inch	17½
2 and 2¼-inch	32
2½ to 3-inch	43
3¼ to 4-inch	48
CHARCOAL IRON	
1½-inch	+11
1¾-inch	+ 1
2 and 2¼-inch	9
2½ to 3-inch	14
3¼ to 4½-inch	16
SEAMLESS COLD DRAWN	
1-inch	51
1¼ and 1½-inch	43
1¾-inch	27
2 and 2¼-inch	30
2½ and 2¾-inch	34
3-inch	38
3¼ to 4-inch	43
4½ and 5-inch	35
SEAMLESS HOT ROLLED	
3-inch	40
3¼ to 4-inch	45

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING
Base Discounts

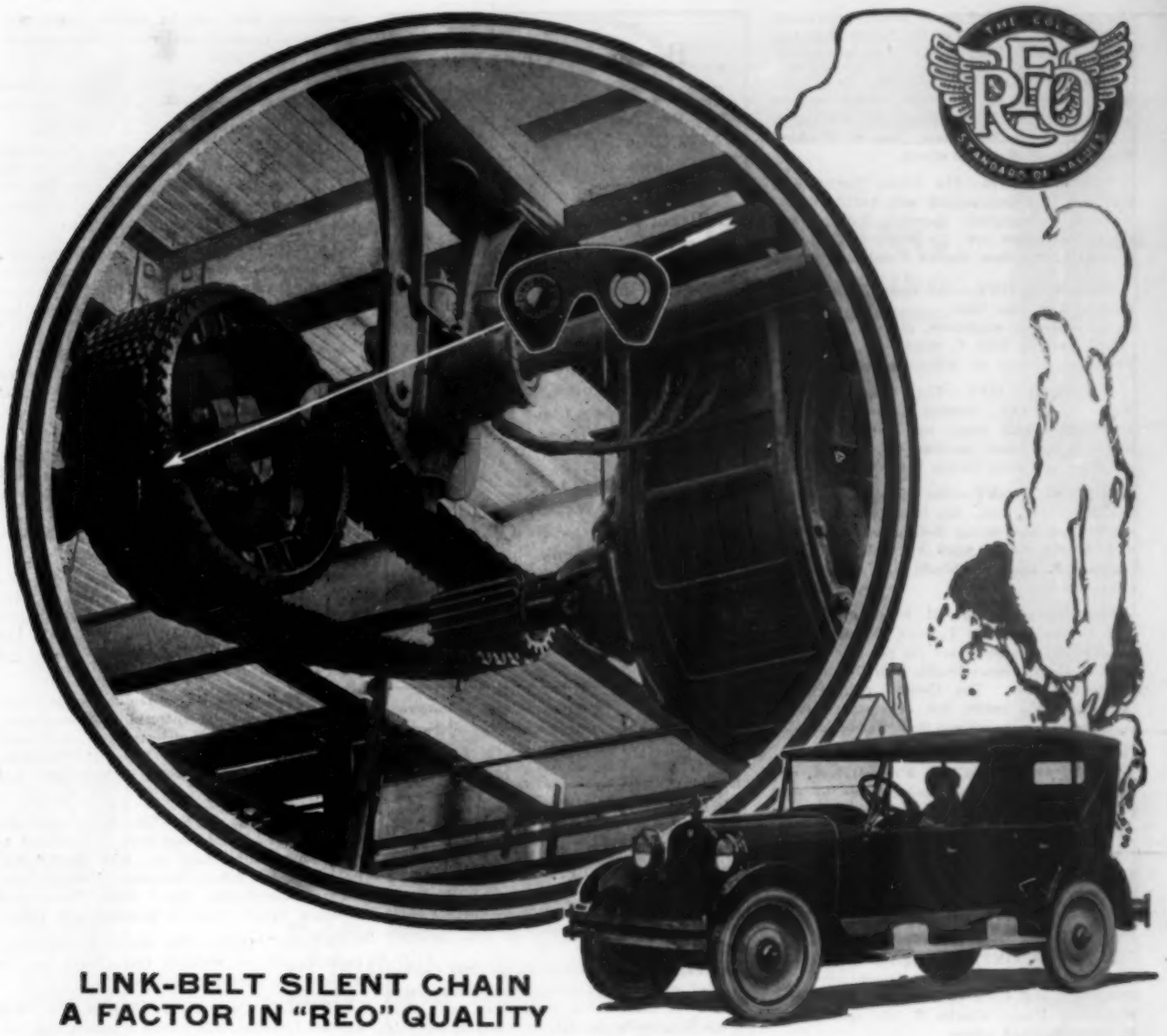
Carbon, 0.10 to 0.20 per cent	85 off
Carbon, 0.30 to 0.40 per cent	83 off
Carbon, 0.40 to 0.50 per cent	82 off

Plus usual differentials and extras for cutting.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES
Net prices per foot, f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	19c
3-inch	7-gage	34c
1½-inch	9-gage	13¼c
5⅜-inch	9-gage	53c
5½-inch	9-gage	55c

Plus usual extras for forming and for long lengths.



LINK-BELT SILENT CHAIN A FACTOR IN "REO" QUALITY

THE shafting throughout the Reo plant is driven with Link-Belt Silent Chain. In other words, the power is chained to the shafting. Every revolution of the motor produces its effect on the shafting.

There is no slip as with belting. There is no power loss. The drive on machines is steady and uniform. "Chattering" tools are practically a thing of the past. The work is improved. The output is increased. Quality is maintained to the fullest extent.

Most motor car manufacturers use Link-Belt Silent Chain Drives in their plants, because a first-class product is the dominant requirement.

Your product may be anything from hair-pins to locomotives. If you have power driven machinery, your transmission problems are very much alike. We have solved such problems for thousands, although each thought his was "different". Let our experienced power transmission engineers look over your plant and make recommendations.

Send for 128-page price list data book No. 125.

LINK-BELT COMPANY

1045

PHILADELPHIA
CHICAGO
INDIANAPOLIS

New York - - Woolworth Bldg.
Boston 9 - - 49 Federal St.
Pittsburgh - - 1601 Park Bldg.
St. Louis - - Central Nat'l Bank Bldg.
Buffalo - - 547 Ellicott Square
Wilkes-Barre - -
Huntington, W. Va. -
Cleveland - -
Detroit - -
Kansas City, Mo. -
Canadian Link-Belt Co., Ltd., Toronto and Montreal
24 Nat'l Bank Bldg.
Robson-Pritchard Bldg.
429 Kirby Bldg.
4210 Woodward Ave.
306 Kinhurst Bldg.
H. W. CALDWELL & SON CO., CHICAGO
Seattle - - - 820 First Avenue, S.
Portland, Ore. - - - 101 First St.
San Francisco - - 160 Second Street
Los Angeles - - 163 N. Los Angeles St.
Denver - Lindsay, Shubart & Co., Boston Bldg.
NEW YORK, Woolworth Bldg.
Louisville, Ky. - - Frederick Webb, Starks Bldg.
New Orleans - - C. O. Hine, 804 Carondelet Bldg.
Birmingham, Ala. - -
- - B. L. Murrow, 720 Brown-Marx Bldg.
Charlotte, N. C. - - J. S. Cothran, Com'l Bank Bldg.
DALLAS, TEXAS, 709 Main St.

LINK-BELT

ally manufacture a full line of laundry equipment. W. G. Fraser, president of the Beaver Soap Co., is president and H. L. Howard resident manager.

TORONTO, ONT.—The Canadian Auto Pump & Appliances, Ltd., has been incorporated to manufacture pumps, etc., with $100,000 capital stock by Thomas G. Reason, John F. Watkins, Kenneth A. McRae, and others.

TORONTO, Ont.—The Clarke Electric Co., Ltd., has been incorporated with $40,000 capital stock to manufacture electrical fixtures, machines, appliances, etc., by Edward C. Clarke, Thomas L. Monahan, George Keogh, and others.

TORONTO, ONT.—The Radio Valve Co. of Canada, Ltd., has been incorporated to manufacture electrical machinery, etc., with $150,000 capital stock by John C. Macfarlane, Hedley K. Thompson, George G. Miles, and others.

TORONTO, ONT.—The Great Northern Power Co., Ltd., recently incorporated with $2,000,000 capital stock, has started work on hydro-electric power development on the Montreal river at Indian Chutes, Ont.

TORONTO, ONT.—The Money-Back Gasoline Saver Co., Ltd., has been incorporated to manufacture gas saving devises for motor cars with $50,000 capital stock by Carl V. Farmer, Clarence P. Hope, Archibald G. Campbell, and others.

TORONTO, Ont.—D. M. Fraser of the Corman Engineering Co., Toronto, announced that his company has purchased the plant and equipment of the Chapman Double Ball Bearing Co., Sorauren avenue. The Corman company has taken over the entire line of manufacture of the Chapman company and these will be included in its regular line of manufacture.

TRENTON, Ont.—Gill & Fortune, Ltd., will erect a lumber mill here and propose to start construction work immediately. Equipment for mill will be required.

WELLAND, ONT.—The Crowland Brick & Tile, Ltd., has been incorporated to manufacture brick, etc., with $40,000 capital stock by Herbert L. Hatter, John F. Thorpe, George H. Tott, and others.

WINDSOR, ONT.—The Industrial Lock Nut Co. of Canada, Ltd., has been incorporated with $100,000 capital stock by Napoleon R. Thibert, Worcester, Mass.; Charles P. McTague, Lorne R. Cumming, and others.

WINDSOR, ONT.—The Canadian Engineering & Tool Co., Ltd., has been incorporated to manufacture machinery, tools, etc., with $50,000 capital stock by Percy J. McConnell, Windsor, Ont.; William E. Tregenza, of Detroit, and others.

WOODSTOCK, ONT.—Thomas Watson, Ltd., has been incorporated to manufacture machinery, engines, motors, tools, implements, etc., with $300,000 capital stock; by Thomas Watson, Bernard Blair and Robert A. Bolton, of Woodstock.

Business Changes

THE Big Savage Fire Brick Co. Frostburg, Md., has appointed J. W. Dowling, Bessemer building, Pittsburgh, as agent.

* * *

Retail business of the Salt Lake Hardware Co., Salt Lake City, was closed out Nov. 30 and the company now is devoting its facilities to its wholesale business.

* * *

Cleveland offices of Manning, Maxwell & Moore, Inc., are being re-opened in the Huron-Sixth building, in charge of H. F. Nickerson.

* * *

The Wilson Welder & Metals Co., 132 King street, New York, announces that it now is represented exclusively in Maryland, Virginia and the District of Columbia, by the Alexander Milburn Co. of Baltimore.

ASBESTOS, Que.—The Asbestos Corp. of Canada proposes to spend $500,000 on additions and new equipment for plant here.

DRUMMONDVILLE, Que.—Preliminary plans are being prepared for a dam and power plant to cost $700,000 for the Southern Canada Power Co., 20 St. Nicholas street, Montreal, Que.

HULL, Que.—The Lion Meade Tire Co. has awarded the general contract to Eucher Caron & Son, 158 Chamberlain street, Hull, for a plant in the Wrightville district, to cost $55,000.

HULL, Que.—The proposed hydroelectric plant at Paugan Falls, Que., will have an ultimate capacity of 150,000 horsepower according to a report made by G. Gordon Gale, vice president and general manager of the Hull Electric Co. here, who also states that until certain surveys have been made it cannot be definitely stated what the undertaking will cost, nor when construction work will be started. It is estimated that the plant will cost in the neighborhood of $10,000,000.

MONTREAL, Que.—The Montreal Metal Co., 31 St. Nicholas street, will erect a foundry at a cost of $10,000.

MONTREAL, QUE.—The Boiler Equipment Co., Ltd., has been incorporated to manufacture and deal in stoves, boilers, etc., with $50,000 capital stock by Thomas Turner, John H. Holloway, Timothy P. O'Connor, and others.

MONTREAL, QUE.—The James Corp., Ltd., has been incorporated to manufacture cutlery, etc., with $300,000 capital stock by Maurice Dugas, S. H. R. Bush, John P. Callaghan, and others.

MONTREAL, QUE.—The Norton Steel Co., Ltd., has been incorporated to manufacture nd deal in iron, steel, etc., with $100,000 capital stock by Frank B. Common, Francis G. Bush, Herbert W. Jackson, and others.

MONTREAL, QUE.—Northern Giant Explosives, Ltd., has been incorporated to manufacture explosives, powder and ammunition with $2,500,000 capital stock, by George H. Sedgewick, James Aitchison and John W. Pickup, Toronto.

MONTREAL, QUE.—The United Power Co., Ltd., has been incorporated to carry on business as a light, heat, power and transportation company with $250,000 capital stock, by Maurice Dugas, Segfried H. R. Bush and John P. Callaghan, Montreal.

MONTREAL, QUE.—Jamieson-Robertson, Ltd., have been incorporated to manufacture and deal in asbestos products, fibre, etc., with $50,000 capital stock by Peter H. Jamieson, Royal E. C. Werry, George S. McFadden, and others.

MONTREAL, QUE.—The Rex Automatic Carburetor Co., Ltd., has been incorporated to manufacture carburetors, etc., with $50,000 capital stock by Albert Beaudoin, Philias Piche, both of Laurentides, Que.; Emile Drevet and Francois Valade, both of Montreal, and others.

QUEBEC, QUE.—The Standard Steel Construction Co., of Welland, Ont., has a site for a plant for steel manufacture.

QUEBEC, Que.—E. T. Nesbitt, 74 Tenth avenue, Limoilou, will rebuild a factory and sawmill recently damaged by fire and will be in the market for equipment.

WINDSOR MILLS, Que.—Kilgour Bros., 21 Wellington street West, Toronto, Ont., dealers in paper bags, etc., are having plans prepared for the erection of a manufacturing plant here to cost $100,000. Architect D. C. Cotton, 54 Adelaide street East, Toronto.

New Trade Publications

FAN SYSTEMS—The B. F. Sturtevant Co., Boston, has published a 70-page illustrated booklet in which fan systems for collecting dust and conveying materials are described and illustrated. The booklet is divided into two sections the first being devoted to describing apparatus used in collecting and conveying material, and the second containing data covering design and application of collecting systems. The illustrations are of actual installations.

ENGINE LATHES—Oliver Machinery Co., Grand Rapids, Mich., has published an 8-page illustrated booklet in which 10, 12 and 14-inch screw cutting engine lathes are described and illustrated. With these lathes two kinds of headstocks may be furnished; cone pulley, single back geared, or all steel geared head. Either may be belt or motor driven. The lathes are described in some detail and specifications are given.

WORLD MARKETS—The First National bank of Boston has published a supplement to the booklet which it issued two years ago entitled "Markets of the World." It is made up of a series of commercial maps and statistical data concerning the United States and Canada and embraces an unusual compilation of useful commercial information conveniently presented. It has been prepared especially for the use of the sales manager, in determining the market possibilities of any given state, province or territory. Detailed figures covering area and topography, population, education, industry, transportation, finances, principal cities and legal holidays are given. It is in loose-leaf form and designed to be inserted in the original folder.

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Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$14.00 to 15.00
Boston (dealers)	12.00 to 13.50
Chicago	16.75 to 17.25
Buffalo	19.00 to 19.50
Cincinnati	16.50 to 17.00
Cleveland	18.00 to 18.50
Eastern Pennsylvania	16.00 to 17.00
New York (dealers)	12.50 to 13.00
Pittsburgh	20.00 to 20.50
San Francisco	12.50 to 13.00
St. Louis	15.50 to 16.00
Valleys	20.50 to 21.00
No. 1 railroad steel New York (dealers)	13.25 to 13.75

BUNDLED SHEETS

Buffalo	$14.00 to 15.00
Cleveland	12.50 to 13.00
Cincinnati	12.00 to 12.50
Eastern Pennsylvania	14.50 to 15.00
Pittsburgh	17.50 to 18.00
St. Louis	9.50 to 10.00
Valleys	16.00 to 16.50

STEEL RAILS, SHORT

Birmingham	$14.00 to 15.00
Boston (dealers)	13.00 to 14.00
Chicago	19.00 to 19.50
Cincinnati	19.00 to 20.00
Cleveland	16.25 to 17.00
St. Louis	19.00 to 19.50

STOVE PLATE

Birmingham	$15.00 to 16.00
Boston (consumers)	16.00 to 17.00
Buffalo	17.00 to 18.00
Chicago	18.00 to 18.50
Cincinnati (net)	14.00 to 15.00
Cleveland	17.00 to 17.75
Eastern Pennsylvania	16.00 to 17.00
New York (dealers)	13.00 to 13.50
Pittsburgh	17.00 to 17.50
St. Louis	15.50 to 16.00

LOW PHOSPHORUS

Buffalo	$21.00 to 22.00
Cincinnati	18.00 to 18.50
Eastern Pennsylvania	22.00 to 23.00
Pitts. billet and bloom crops	24.00 to 25.00

SHOVELING STEEL

Chicago	$16.50 to 16.75
Pittsburgh	17.50 to 18.00
St. Louis	15.00 to 15.50

KNUCKLES, COUPLERS & SPRINGS

Chicago	$22.00 to 22.50
Eastern Pennsylvania	21.00 to 22.00
Pittsburgh	21.00 to 21.50
St. Louis	21.50 to 22.00

COMPRESSED SHEETS

Buffalo	$16.50 to 17.00
Chicago	14.00 to 14.50
Pittsburgh	19.00 to 19.50
Cleveland	16.00 to 16.50
Valleys	19.00 to 19.50

FROGS, SWITCHES, GUARDS

Chicago	$16.75 to 17.25
Eastern Pennsylvania	16.00 to 17.00
St. Louis	16.00 to 16.50

BOILER PLATE, CUT

St. Louis (dealers)	$10.50 to 11.00

ANGLE BARS—STEEL

Chicago	$18.50 to 19.00
St. Louis	17.00 to 17.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	$15.00 to 16.00
Boston (dealers)	14.00 to 14.50
Buffalo	19.00 to 19.50
Chicago, No. 1	17.00 to 17.50
Chicago, No. 2	16.75 to 17.25
Cincinnati, No. 1	14.50 to 15.50
Cleveland, No. 1	12.00 to 12.25
Eastern Pennsylvania, No. 1	19.00 to 20.00
Pittsburgh, No. 1	19.00 to 20.00
Pittsburgh, No. 2	20.00 to 20.50
New York, No. 1 (dealers)	15.50 to 16.00
St. Louis, No. 2	17.00 to 17.50
St. Louis	15.00 to 15.50

WROUGHT PIPE

Boston (dealers)	$9.50 to 10.00
Buffalo	14.00 to 14.50
Eastern Pennsylvania	14.00 to 14.50
New York (dealers)	10.25 to 10.75

YARD WROUGHT

Boston	$13.00 to 13.50
Eastern Pennsylvania, No. 1	17.00 to 18.00

CITY WROUGHT

New York, long	$13.00 to 13.50

BUSHELING

Buffalo, No. 1	$17.00 to 17.50
Chicago, No. 1	15.00 to 15.50
Chicago, No. 2	9.50 to 10.00
Cincinnati, No. 1	14.00 to 15.00
Cleveland, No. 1	12.75 to 13.00
Cleveland, No. 2	12.00 to 12.25
Eastern Pennsylvania, No. 1	14.50 to 15.00
Pittsburgh, No. 1	17.00 to 17.50
St. Louis, No. 1	14.50 to 15.00

MACHINE SHOP TURNINGS

Birmingham	$10.00 to 11.00
Boston (dealers)	10.00 to 10.50
Buffalo	15.00 to 16.00
Chicago	10.00 to 10.50
Cleveland	14.25 to 14.50
Cincinnati (net)	11.50 to 12.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.25 to 11.75
Pittsburgh	15.50 to 16.00
St. Louis	10.50 to 11.00
Valleys	15.75 to 16.00

CAST IRON BORINGS

Birmingham (chemical)	$15.00 to 16.00
Birmingham, borings (plain)	10.00 to 10.50
Boston (chemical)	17.00 to 17.50
Boston (dealers)	13.50 to 14.00
Buffalo	16.50 to 17.00
Chicago	14.75 to 15.25
Cincinnati (net)	12.00 to 12.50
Cleveland	15.00 to 15.50
Eastern Pennsylvania	15.00 to 16.00
Eastern Pennsylvania (chemical)	20.00 to 22.00
Pittsburgh	17.00 to 17.50
New York (dealers' price)	11.75 to 12.25
St. Louis	12.00 to 12.50
Valleys	17.25 to 17.50

MIXED BORINGS AND TURNINGS

(For blast furnace use)

Boston (dealers)	11.00 to 11.50
Cleveland, small	15.50 to 16.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	11.75

IRON AXLES

Birmingham	$18.00 to 20.00
Boston	27.00 to 28.00
Buffalo	24.00 to 25.00
Chicago	27.00 to 27.50
Cincinnati	23.00 to 24.00
Eastern Pennsylvania	28.00 to 30.00
New York (dealers)	24.00 to 25.00
Pittsburgh	29.00 to 30.00
St. Louis	28.00 to 28.50

IRON RAILS

Buffalo	$19.00 to 20.00
Chicago	22.00 to 22.50
Cincinnati	16.00 to 17.00
Cleveland	18.00 to 18.50
St. Louis	20.50 to 21.00

PIPES AND FLUES

Chicago	$11.00 to 11.50
Cincinnati	11.00 to 12.00
Cleveland	13.00 to 13.50
St. Louis	10.50 to 11.00

RAILROAD GRATE BARS

Buffalo	$16.00 to 17.00
Chicago	17.50 to 18.00
Cleveland	17.00 to 17.75
Eastern Pennsylvania	16.00 to 16.50
New York (dealers)	12.50 to 13.00
St. Louis	16.50 to 17.00

FORGE FLASHINGS

Boston (dealers)	$11.00 to 11.50
Chicago, small	12.00 to 12.50
Cleveland	12.50 to 13.00
Cleveland, large	12.25 to 12.50

FORGE SCRAP

Boston	$9.00 to 9.50
Chicago	16.75 to 17.25
Eastern Pennsylvania, No. 1	15.00 to 15.50

ARCH BARS AND TRANSOMS

Chicago	$22.75 to 23.25
St. Louis	21.00 to 21.50

ANGLE BARS—IRON

Chicago	$22.50 to 23.00
St. Louis	21.00 to 21.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	$12.00 to 12.50
Buffalo	17.50 to 18.50
Chicago	15.25 to 15.75
Cleveland	17.00 to 17.25
Eastern Pennsylvania	15.00 to 16.00
Pittsburgh	17.50 to 18.00
St. Louis	13.00 to 13.50

STEEL CAR AXLES

Birmingham	$18.00 to 20.00
Boston (dealers)	22.50 to 23.00
Buffalo	21.00 to 22.00
Chicago	19.00 to 19.50
Cleveland	22.00 to 22.50
Eastern Pennsylvania	24.00 to 25.00
New York (dealers)	20.50 to 21.00
Pittsburgh	22.00 to 23.00
St. Louis	20.00 to 20.50

SHAFTING

Boston (dealers)	$18.50 to 19.50
Chicago	21.15 to 22.25
Eastern Pennsylvania	21.00 to 23.00
New York (dealers)	16.00 to 16.50
St. Louis	19.00 to 19.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$16.00 to 18.00
Birmingham, tram car	16.50 to 18.50
Boston (consumers)	18.50 to 19.50
Buffalo, iron	21.00 to 22.00
Chicago, iron	23.50 to 24.00
Cincinnati	19.00 to 19.50
Eastern Pennsylvania, cupola	20.00 to 21.00
New York, iron (dealers)	21.00 to 22.00
Pittsburgh, iron	21.00 to 22.00
Pittsburgh, steel	21.00 to 21.50
St. Louis, iron	22.50 to 23.00

NO. 1 CAST SCRAP

Birmingham, cupola	$17.50 to 18.50
Boston (consumers)	21.00 to 22.00
Buffalo	21.00 to 22.00
Chicago, cupola	22.00 to 22.50
Cincinnati, No. 1, machinery, cupola (net)	21.00 to 22.00
Cleveland, cupola	20.00 to 21.00
Eastern Pennsylvania, cupola	20.00 to 21.00
New York, cupola (dealers)	17.50 to 18.25
Pittsburgh, cupola	22.50 to 23.00
San Francisco	25.00 to 26.00
St. Louis, agricultural	18.00 to 18.50
St. Louis, railroad	19.00 to 19.50
Valleys	22.00 to 22.50

HEAVY CAST

Boston (consumers)	$19.00 to 19.50
Buffalo	18.00 to 19.00
Cleveland	16.00 to 16.25
Eastern Pennsylvania	19.50 to 20.00
New York (dealers)	15.50 to 16.00
Pittsburgh	18.50 to 19.00

MALLEABLE

Boston (railroad)	$19.50 to 20.00
Buffalo	20.00 to 21.00
Chicago, railroad	22.50 to 23.00
Chicago, agricultural	22.50 to 23.00
Cincinnati, agricultural	17.00 to 18.00
Cincinnati, railroad	17.50 to 18.50
Cleveland, agricultural	18.50 to 19.00
Cleveland, railroad, nominal	20.00
Eastern Pennsylvania, railroad	19.00 to 20.00
Pittsburgh, railroad	20.00 to 21.00
Pittsburgh, agricultural	17.00 to 17.50
St. Louis, agricultural	20.00 to 20.50
St. Louis, railroad	20.00 to 20.50

Miscellaneous Scrap

RAILS FOR ROLLING

5 feet and over

Birmingham	$16.00 to 17.00
Boston (dealers)	15.50 to 16.00
Chicago	17.75 to 18.25
Cleveland	20.00 to 20.50
Eastern Pennsylvania	21.00 to 22.00
New York (dealers)	16.00 to 16.50
Pittsburgh district	21.00 to 22.00
St. Louis	17.50 to 18.00

LOCOMOTIVE TIRES

Chicago	$17.50 to 18.00
St. Louis	17.00 to 17.50

LOW PHOSPHORUS PUNCHINGS

Chicago	$18.50 to 19.00
Eastern Pennsylvania	22.00 to 24.00
Pittsburgh	24.00 to 25.00

Nacht-Ausgabe

Nr. 318 – Preis 8 Mark

Der Tag

28./29. Oktober 1922

Ueber die Lage des amerikanischen Eisen- und Stahlmarktes bringt das amerikanische Fachblatt The Iron Trade Review, Cleveland, Ohio: Die ein wenig gebesserte Wagonbestellung hat eine Erleichterung der Marktlage und ein Fallen der Preise für Koks auf 8 Doll. gebracht. Die Stahlpreise gehen zurück, mit Ausnahme der Röhrenpreise, die um 4—6 Doll. gestiegen sind. Durch das Zurückgehen der Roheisenpreise um 1 Doll. und mehr ist die Kauflust reger geworden. Die Standard Oil Company fragt 150 000 Kistad Weißblech an. Englische Hütten erhielten einen Auftrag auf 10 000 t Brückenstahl für die ostindischen Staatsbahnen in Konkurrenz mit amerikanischen Walzwerken, die einen um 10 Doll. höheren Preis forderten. Der Stahltrust schloß 3000 t Stahl für Uruguay ab. Amerikanische Hochofenwerke fordern für Ferromangan 100 Doll., britische Werke 101.10 Doll. einschließlich Zoll. Britisches und anderes ausländisches Roheisen wird zu billigeren Preisen angeboten.

Der Tag is an interesting daily newspaper published in Berlin, devoted largely to business and financial matters. It is one of the many scores of newspapers in Europe regularly quoting Iron Trade Review.

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European Iron and Steel Statistics

Gross Tons

Pig Iron Production

	United Kingdom	France	Belgium	Luxemburg
Monthly average 1912..	729,000	405,000	192,000	184,800
Monthly average 1913..	855,000	427,000	203,800	209,000
Monthly average 1919..	617,000	198,000	20,600	50,000
Monthly average 1920..	667,300	281,700	92,700	58,000
Monthly average 1921..	217,600	280,300	71,800	79,600
1921				
January	642,100	288,000	110,600	93,500
February	463,600	287,400	103,700	81,700
March	386,000	295,300	104,700	27,600
April	60,300	287,700	94,700	70,800
May	13,600	278,100	74,600	78,700
June	800	289,900	67,400	81,700
July	10,200	262,400	44,600	70,000
August	94,200	250,800	43,800	72,800
September	158,300	239,800	59,800	86,200
October	235,500	251,800	45,800	98,800
November	271,800	290,000	59,800	92,400
December	275,000	296,300	73,000	100,800
Total for 1921.....	2,611,400	3,308,500	862,500	955,000
1922				
January	288,000	307,000	92,700	99,900
February	300,100	318,000	90,300	95,200
March	389,800	370,000	116,500	130,900
April	394,300	377,300	112,000	128,800
May	407,900	435,300	117,100	139,300
June	369,200	409,300	113,100	141,500
July	399,100	421,400	125,200	147,800
August	411,700	440,400	151,500	147,800
September	430,300	.....	.....	.....
October	481,500	.....	.....	.....

Ingots and Castings Production

	United Kingdom	France	Belgium	Luxemburg
Monthly average 1912..	566,000	363,000	206,000	79,400
Monthly average 1913..	639,000	385,000	202,300	109,000
Monthly average 1919..	658,000	179,000	27,400	32,000
Monthly average 1920..	754,700	250,200	101,300	49,000
Monthly average 1921..	302,100	254,500	65,000	62,300
1921				
January	493,400	263,700	119,100	70,800
February	483,500	259,600	98,400	62,000
March	359,100	246,900	96,300	19,700
April	70,600	252,600	108,700	57,100
May	5,700	240,400	62,800	56,100
June	2,700	240,800	54,200	61,000
July	117,200	219,500	26,900	57,100
August	434,100	228,600	27,800	55,100
September	429,300	232,100	34,000	76,200
October	405,400	255,900	41,900	81,800
November	443,800	272,700	46,200	69,900
December	381,000	297,600	63,200	80,700
Total for 1921.....	3,625,800	3,010,400	779,500	747,500
1922				
January	327,500	309,000	78,400	75,600
February	418,800	311,800	82,700	75,100
March	549,400	361,200	104,000	99,200
April	404,200	319,300	95,200	98,100
May	462,300	358,100	116,500	112,200
June	400,200	352,500	111,300	121,600
July	473,100	362,900	112,500	125,600
August	528,400	390,300	149,100	129,200
September	555,900	.....	.....	.....
October	565,200	.....	.....	.....

Imports

	United Kingdom	France	Belgium	Germany
Average monthly 1912..	166,400	16,400	87,000	27,300
Average monthly 1913..	185,900	12,900	68,900	25,000
Average monthly 1919..	42,400	113,100	44,400	.....
Average monthly 1920..	92,400	89,000	67,000	26,200
Average monthly 1921..	137,100	38,500	43,300	.....
1921				
January	157,800	44,200		
February	153,400	35,400	120,100	125,000*
March	156,100	33,900		
April	102,100	26,100		
May	81,900	31,700	95,500	36,000
June	84,500	20,700		42,100
July	103,600	30,300		45,100
August	141,500	16,100	130,600	61,200
September	206,100	27,900		79,800
October	172,800	19,800		96,600
November	169,200	20,700	168,000	54,300
December	117,000	128,000		56,300
Total for 1921.....	1,646,000	434,800	514,200	596,400*
1922				
January	88,700	36,600	139,000	68,200
February	64,600	55,800	First	66,900
March	63,800	67,300	Quarter	105,700
April	59,900	89,100	.....	129,000
May	60,900	41,100	.....	154,300
June	52,800	73,200	.....	136,690
July	55,900	54,800	.....	182,900
August	80,100	.....	.....	.....

Exports

	United Kingdom	France	Belgium	Germany
Average monthly 1912..	400,600	41,500	124,500	482,400
Average monthly 1913..	414,100	48,200	128,800	516,900
Average monthly 1919..	186,100	19,400	14,500	.....
Average monthly 1920..	271,100	74,600	74,300	143,600
1921				
January	232,400	89,300		
February	166,900	125,800	294,000	503,600*
March	148,900	122,700		
April	160,100	117,400		.....
May	99,000	96,900	241,300	127,800
June	64,700	109,100		159,700
July	64,000	87,600		175,000
August	76,500	122,500	192,300	236,300
September	133,300	171,200		221,800
October	155,800	188,300		242,300
November	193,500	167,400	176,000	230,600
December	205,300	131,700		212,900
Total for 1921.....	1,700,400	1,529,900	903,600	2,110,000*
1922				
January	253,300	164,000	198,400	218,200
February	223,400	107,000	First	170,000
March	295,800	72,300	Quarter	208,700
April	258,400	125,800	.....	195,500
May	272,400	122,200	.....	204,500
June	236,300	180,300	.....	209,132
July	251,700	182,100	.....	206,200
August	270,000	.....	.....	.....

*Provisional estimate. Export and import figures do not include scrap.

American Iron and Steel Exports and Imports

Gross Tons

	Imports	Exports
1922		
August	32,010	144,264
July	44,384	156,392
June	24,101	216,298
May	17,292	229,616
April	15,884	197,562
March	8,612	206,474
February	10,216	133,333
January	10,511	155,822
1921		
December	9,400	134,348
November	9,296	125,492
October	10,609	106,466
September	11,743	94,650
August	8,069	75,641
July	10,040	85,520
June	8,260	119,021
May	10,915	140,987
April	4,847	160,921
March	14,492	210,451
February	3,650	387,900
January	15,784	516,447
Total	117,105	2,156,818

1920		
December	15,120	499,780
November	50,995	434,290
October	39,797	451,972
September	31,825	408,605
August	58,335	431,519
July	32,742	419,230
June	40,549	392,780
May	29,125	419,064
April	29,681	395,583
March	38,377	426,448
February	36,491	308,128
January	45,796	333,514
Total	448,833	4,920,913
1919		
December	39,806	254,780
November	43,826	336,994
October	40,698	302,459
September	43,567	363,531
August	28,987	396,743
July	28,258	287,685
June	21,056	561,020
May	17,885	422,282
April	16,560	396,813
March	17,632	367,224
February	12,302	344,180
January	16,913	371,570
Total	327,490	4,405,281
1918	168,225	5,372,424
1917	324,565	6,442,240
1916	310,891	5,947,646
1915	282,396	3,532,564
1914	289,775	1,549,554
1913	317,260	2,745,635
1912	225,072	2,947,596
1911	262,457	2,187,725
1910	510,730	1,537,943
1909	363,984	1,243,583
1908	205,845	964,242
1907	662,358	1,301,981
1906	577,809	1,325,740
1905	416,000	1,010,255
1904	266,398	1,167,674
1903	1,178,797	326,590
1902	1,212,484	411,915
1901	221,297	81,211
1900	209,955	286,687